DIVISION ÷

Year 3 Divide 2-digit numbers by a single digit

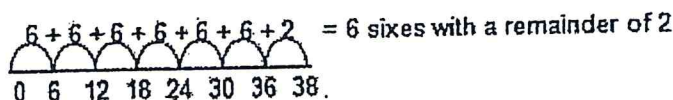Example without remainder:
40 ÷ 5
Ask "How many 5s in 40?"

$5 + 5 + 5 + 5 + 5 + 5 + 5 + 5$ = 8 fives

0 5 10 15 20 25 30 35 40

Example with remainder:
38 ÷ 6

$6 + 6 + 6 + 6 + 6 + 6 + 2$ = 6 sixes with a remainder of 2

0 6 12 18 24 30 36 38.
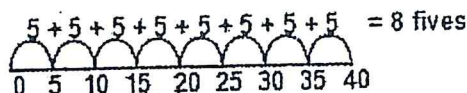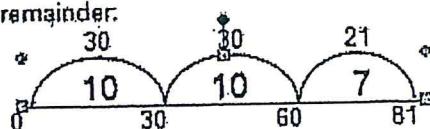
For larger numbers, when it becomes inefficient to count in single multiples, bigger jumps can be recorded using known facts.
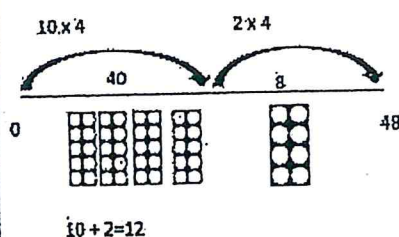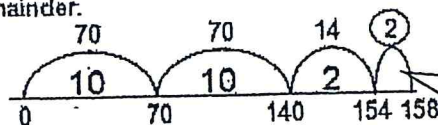
Example without remainder:
81 ÷ 3

30   30   21
10   10   7
0   30   60   81

This could either be done by working out the numbers of threes in each jump as you go along (10 threes are 30; another 10 threes makes 60, and another 7 threes makes 81. That's 27 threes altogether) or by counting in jumps of known multiples of 3 to reach 81 (30 + 30 + 21) then working out the number of threes in each jump.

Example with remainder:
158 ÷ 7

70   70   14   ②
10   10   2
0   70   140   154 158

Model first using Dienes, then using bead bar to show link to ENL

10 x 4   2 x 4

40   8

0   48

10 + 2 = 12

Grouping on a number line first without, then with remainders

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Key vocabulary share, share equally, one each, two each…, group, equal groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over, inverse, short division, 'carry', remainder, multiple

Key Skills for division at Year 3

- Recall and use division facts for the 2, 3, 4, 5, 8 and 10 multiplication tables
- Write and calculate mathematical statements for division using the multiplication tables that they know, including for two-digit numbers divided by one digit
- Solve problems, in contexts, and including missing number problems, involving division.
- Pupils develop efficient mental methods, for example, using division facts (e.g. using 3 × 2 = 6, 6 ÷ 3 = 2 and 2 = 6 ÷ 3) to derive related facts (30 × 2 = 60, so 60 ÷ 3 = 20 and 20 = 60 ÷ 3).
- Pupils develop reliable written methods for division, starting with calculations of 2-digit numbers by 1-digit numbers using a ENL.
- Halve even numbers up to 50 and multiples of ten to 100
- Perform divisions within the tables including those with remainders, e.g. 38 ÷ 5.

Year 3 Add numbers up to 3 digits

Use partitioning method for addition to add two or three 3-digit numbers or three 2-digit numbers (see year 2) Begin to use compact column addition to add numbers with three digits.

Use this intermediate step only if children experience difficulty moving on from partitioning method.

When do we know children are ready for this method?

Do they know addition and subtraction facts to 20?

Do they understand place value and can they partition numbers?

Can they explain their mental strategies orally and record them using informal jottings?

$$
\begin{array}{r}
2\ 3\ 6 \\
+\ \ 7\ 3 \\
\hline
\ \ \ \ 9 \\
1\ 0\ 0 \\
2\ 0\ 0 \\
\hline
3\ 0\ 9 \\
\end{array}
$$

Tens	Units		Tens	Units
45		39		
34		15		
7	9		5	4

$$
\begin{array}{r}
236 \\
+\ 73 \\
\hline
309 \\
\end{array}
$$
$_1$
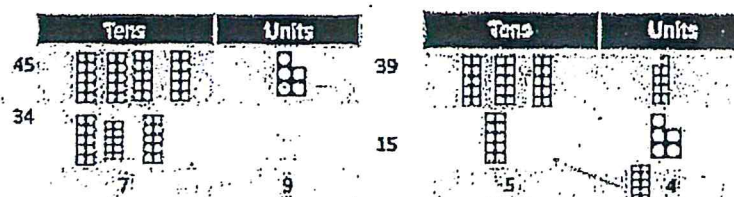
Add the units first, carry numbers underneath the bottom line, remind pupils of actual value eg, 3 tens add 7 tens.

Children who are very secure and confident with 3-digit expanded column addition, should be moved onto the compact column addition method, involving carrying. A comparison of the partitioning addition method to compact method is useful to show minimising the number of steps involved.

Key vocabulary add, more, plus, and, make, altogether, total, equal to, equals, double, most, count on, number line, sum, tens, units, partition, addition, column, tens boundary, hundreds boundary, increase, vertical, 'carry', expanded, compact

## Key Skills for addition at Year 3

- Know pairs with each total to 20
- Know pairs of multiples of 10 with a total of 100
- Add any two 2-digit numbers by counting on in 10s and 1s or by using partitioning
- Add multiples and near multiples of 10 and 100
- Add 1,10, 100 to 3-digit numbers
- Understand place value in 3-digit numbers
- Perform place value additions without a struggle. (E.g. 300 + 8 + 50 = 358)
- Use place value and number facts to add a 1-digit or 2-digit number to a 3-digit number number. (E.g. 104 + 56 is 160 since 104+50=154 and 6+4=10 and 676 + 8 is 684 since 8=4+4 and 76+4+4=84)
- Add pairs of 'friendly' 3-digit numbers mentally, e.g. 320 + 450
- Begin to add amounts of money using partitioning.
- Solve problems with addition using number facts, place value, missing numbers.

Year 3 Subtract with 2 and 3-digit numbers

Subtract on an empty number line (ENL) by counting on

Jump on to next ten first

+ 3   + 40   + 5

37 40   80 85
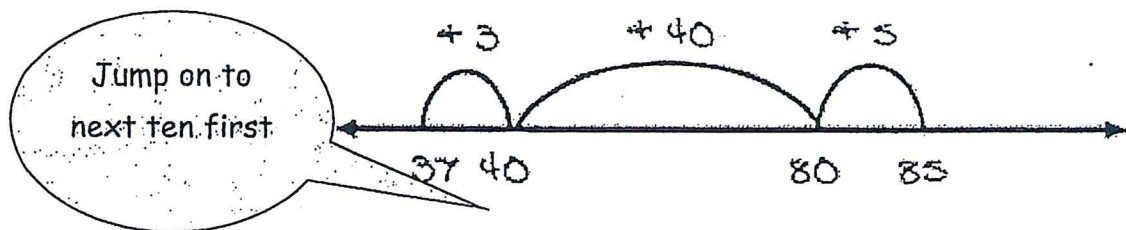
Children should understand when to count back where appropriate, using place value or number facts. This skill should be reinforced through mental work.

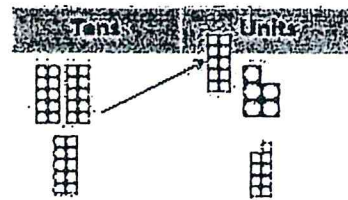Begin to use formal column subtraction method, first using 'friendly numbers'.

```
 38
-12
----
 26
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Friendly numbers, no exchange necessary.

Teach the children to consider the most appropriate method

Move to formal subtraction using 'take and make'.

Tens	Units

```
   5
 6'3
-1 5
----
 4 8
```

Key vocabulary equal to, take, take-away, less, minus, subtract, leaves, distance between, how many more, how many fewer/less than, most, least count back, how many left, how much less is…, difference, count on, strategy, partition, tens units, take and make, exchange, digit, value, hundreds

Key Skills for subtraction at Year 3
- Understand place value in 3-digit numbers; add and subtract 1s, 10s or 100s without difficulty; use this to add and subtract multiples of 1, 10, 100 to/from 3-digit numbers.
- Mentally subtract any pair of 2 digit numbers, e.g. 75 – 58
- Recognise that there are two ways of completing subtractions, either by counting up (using ENL) or by counting back, e.g. 54 – 3 (counting up)
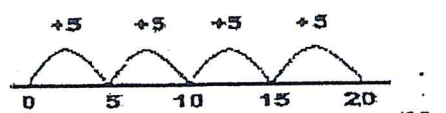- Subtract mentally using place value and number bonds, eg. 347-5, 347-40, 347-100)

MULTIPLICATION X

Year 2 Multiplication using arrays and repeated addition.
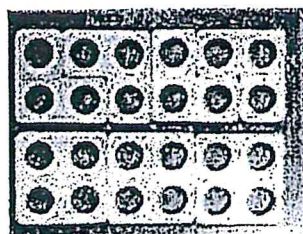
(using at least 2s, 5s and 10s)

Starting from zero, make equal jumps on a number line to work out multiplication facts and write multiplication
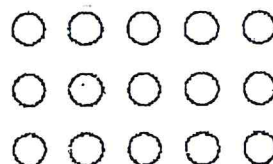
Use repeated addition on a number line:

$$4 \times 5 = 20$$

$5 \times 3 = 15$

$3 \times 5 = 15$

Use arrays and Numicon to help teach children to understand the commutative law of multiplication and give
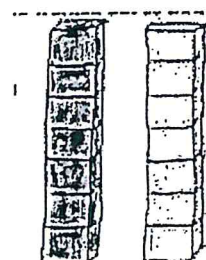
Learn doubles to double 20

Begin to double multiples of 5 to 100

Begin to double two-digit numbers less than 50 with 1s digits of 1, 2, 3 4 or 5

Key vocabulary groups of, lots of, times, array, altogether, multiply, count, multiplied by, repeated addition, column, row, sets of, equal groups, times as big as, once, twice, three times...

Key Skills for addition at Year 2

- Count in steps of 2, 3 and 5 from zero and in 10s from any number
- Know the 2X, 5X and 10X tables and begin to say how many 10s are in 40 or how many 5s are in 30; recognise odd and even answers
- Write and calculate number statements using x and = signs
- Show that multiplication can be done in any order
- Solve a range of problems involving multiplication, using concrete objects, arrays, repeated addition, Numicon, mental methods and multiplication facts