Addition

Year 2

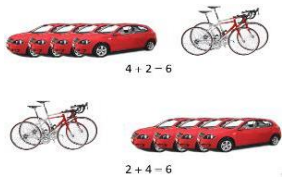
Pupils should be taught to:

- Solve problems with addition
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- Recall and use addition facts to 20 fluently, and derive and use related facts up to 100
- 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
  - adding three one-digit numbers
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

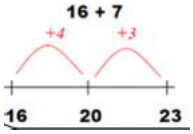
Addition in any order e.g.

4 + 2 = 6

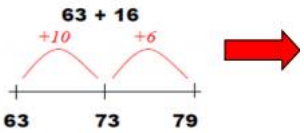
2 + 4 = 6

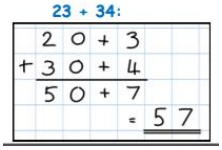


Add 2-digit numbers and units:
Use empty number lines, concrete equipment, hundred squares etc. to build confidence and fluency in mental addition skills.

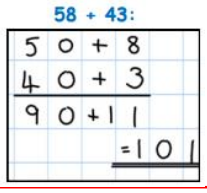


Add pairs of 2-digit numbers, moving to the partitioned column method when secure adding tens

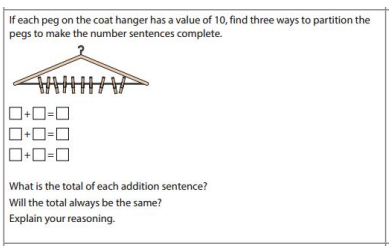




Once children can add a multiple of ten to a 2-digit number mentally (e.g. 80+11), they are ready for adding pairs of 2-digit numbers that DO cross the tens boundary (e.g. 58 + 43).



Mastery in addition – see NCETM website for more examples



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

Subtraction

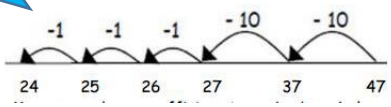
Year 2

Pupils should be taught to:

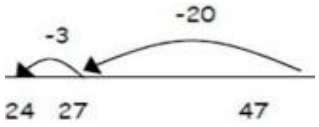
- Solve problems with subtraction:
  - using concrete objects and pictorial representations, including those involving numbers, quantities and measures
  - applying their increasing knowledge of mental and written methods
- Recall and use subtraction facts from 20 fluently, and derive and use related facts up to 100
- 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
- Show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot
- Recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems.

Subtract the tens first then the ones

Subtracting pairs of 2-digit numbers on a number line:
47 - 23 = 24
Partition the second number and subtract it in tens and ones

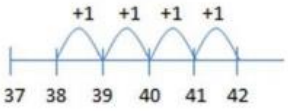


Move towards more efficient jumps back, as below:
Combine methods with use of a hundred square to reinforce understanding of number value and order

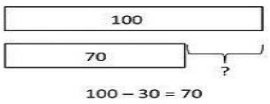


Mental strategy - subtract numbers close together by counting on: Many mental strategies are taught. Children are taught to recognise that when numbers are close together, it is more efficient to count on the difference. They need to be clear about the relationship between addition and subtraction.

Start at the smaller and jump on to the largest number

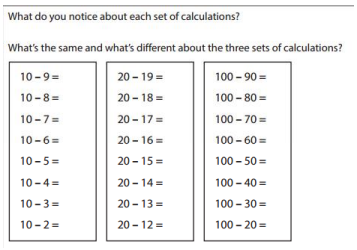


Bar modelling
Sally had 100 rubbers, she gave 70 to her friend
How many did she have left?



Mastery in subtraction – see

NCETM website for more examples


What do you notice about each set of calculations?

What's the same and what's different about the three sets of calculations?

10 – 9 =	20 – 19 =	100 – 90 =
10 – 8 =	20 – 18 =	100 – 80 =
10 – 7 =	20 – 17 =	100 – 70 =
10 – 6 =	20 – 16 =	100 – 60 =
10 – 5 =	20 – 15 =	100 – 50 =
10 – 4 =	20 – 14 =	100 – 40 =
10 – 3 =	20 – 13 =	100 – 30 =
10 – 2 =	20 – 12 =	100 – 20 =

Key vocabulary: equal to, take, takeaway, 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

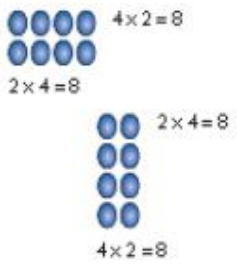
Multiplication

Year 2

Pupils should be taught to:

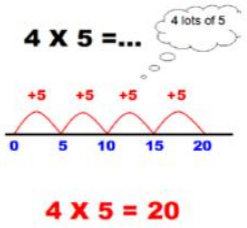
- Recall and use multiplication facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for multiplication within the multiplication tables and write them using multiplication (x) and equals (=) signs
- Show that multiplication of two numbers can be done in any order (commutative) law.
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context.

Continue to use concrete objects where needed. Use arrays and repeated addition on a number line (using at least 2s, 5s and 10s) E.g.

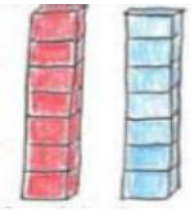


5 x 3 = 15

3 x 5 = 15



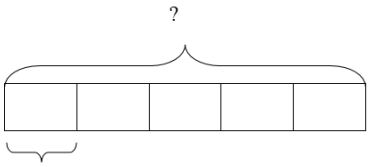
Learn doubles to double 20 Begin to double multiples of 5 to 100 Begin to double two-digit numbers less than 50 with 1s digits of 1, 2, 3 4 or 5



Bar modelling

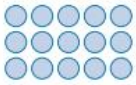
Devi saved £8 a week for 5 weeks.

How much did she save altogether?



Mastery in multiplication - see NCETM website for more examples

This array represents 5 × 3 = 15.



Write three other multiplication or addition facts that this array shows.
Write one division fact that this array shows.

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.

Division

Year 2

Pupils should be taught to:

- Recall and use division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers
- Calculate mathematical statements for division within the multiplication tables and write them using multiplication (x), division (÷) and equals (=) signs
- Show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot.
- Solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in context.

Arrays
How many groups of 3?
How many groups of 5?
15 shared between 3 people is...?
15 shared between 5 people is...?

15 divided by 5 = 3
15 divided by 3 = 5

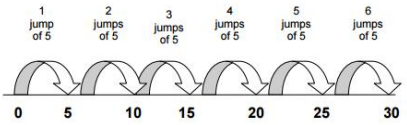
Sharing and grouping

30 crayons shared equally between three pots. (Sharing)

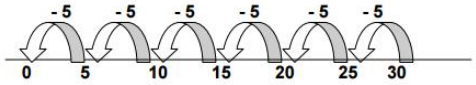
We have 30 crayons and put ten crayons in each pot.
How many pots do we need?' (Grouping)

30 divided by 10 = 3
30 divided by 3= 10

When children are ready, use an empty number line to count forwards:
30 ÷ 5 = 6
'How many jumps of five make thirty?'



Also jump back to make the link with repeated subtraction:
30 ÷ 5 = 6
'How many groups of five?'



Mastery in division - see

NCETM website for more examples

Two friends share 12 sweets equally between them. How many do they each get?
Write this as a division number sentence.

Make up two more sharing stories like this one.

Chocolate biscuits come in packs (groups) of 5. Sally wants to buy 20 biscuits in total. How many packs will she need to buy?
Write this as a division number sentence.

Make up two more grouping stories like this one.

Key vocabulary: share, share equally, one each, two each..., group, groups of, lots of, array, divide, divided by, divided into, division, grouping, number line, left, left over