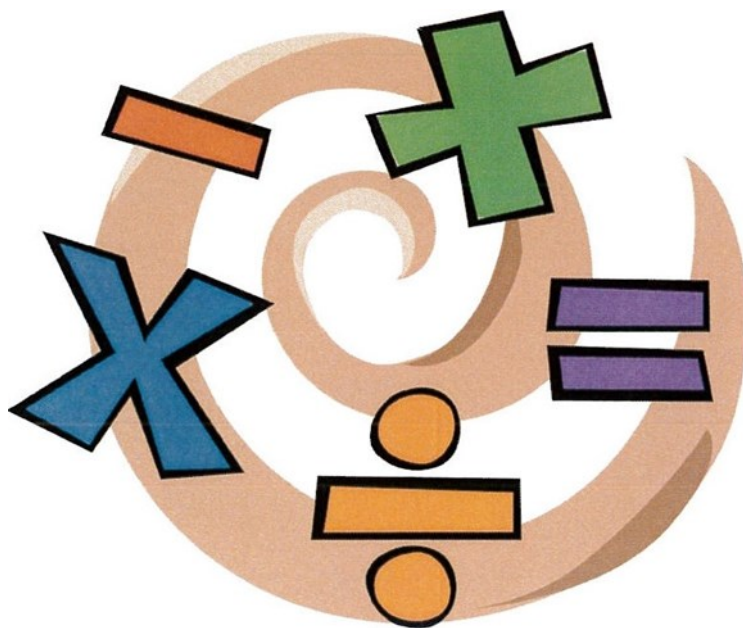# How do we calculate in Year 2?

How do we calculate?

This document is designed to help you to support your child with their learning in Mathematics lessons.

The four operations for calculation -
addition, subtraction, multiplication and division
(+ , -, x and ÷) are explained here in the context of how your child will be calculating during the present school year.

If you have any questions or would like further advice please see your child's class teacher or Mrs Dennis (the mathematics coordinator).

Addition ✚ Year 2

Key skills for addition at **Y2:**

- Add a 2-digit number and ones (e.g. 27 + 6)
- Add a 2-digit number and tens (e.g. 23 + 40)
- Add pairs of 2-digit numbers (e.g. 35 + 47)
- Add three single-digit numbers (e.g. 5 + 9 + 7)
- Show that adding can be done in any order (the commutative law).
- Recall bonds to 20 and bonds of tens to 100 (30 + 70 etc.)

- Count in steps of 2, 3 and 5 and count in tens from any number.
- Understand the place value of 2-digit numbers (tens and ones)
- Compare and order numbers to 100 using < > and = signs.
- Read and write numbers to at least 100 in numerals and words.
- Solve problems with addition, using concrete objects, pictorial representations, involving numbers, quantities and measures, and applying mental and written methods
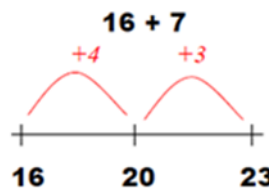
Add with 2 digit numbers.

Developing mental fluency with addition and place value involving 2-digit numbers, then establish more formal methods.
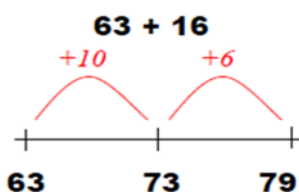
Add 2-digit numbers and tens

27 + 30
+10 +10 +10

27   37   47   57
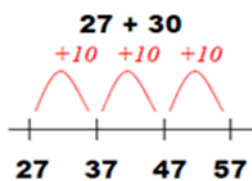
Add 2-digit numbers and units.

16 + 7
+4   +3

16   20   23

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 and units: 23 + 34

63 + 16
+10   +6

63   73   79

➡

```
  2 0 + 3
+ 3 0 + 4
  5 0 + 7
       = 5 7
```

Step 1: Only provide examples that do NOT cross the tens boundary until they are secure with the method itself.

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

58 + 43
```
5 0 + 8
4 0 + 3
9 0 + 1 1
      = 1 0 1
```

Step 3: Children who are confident and accurate with this stage should move onto the expanded addition methods with 2 and 3-digit numbers (See Year 3)

To support understanding, pupils may physically make and carry out the calculation with Dienes Base 10 apparatus or place value counters, then compare their practical versions to the written form, to help them to build an understanding of it.

Subtraction ⬤ Year 2

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

Key skills for subtraction at Y2:

- Recognise the place value of each digit in a two-digit number.

- Recall and use subtraction facts to 20 fluently, and derive and use related facts up to 100.

- Subtract using concrete objects, pictorial representations, 100 squares and mentally, including: a two- digit number and ones, a two-digit number and tens, and two two-digit numbers.

- Show that subtraction of one number from another cannot be done in any order.

- Recognise and use inverse relationship between addition and subtraction, using this to check calculations and missing number problems.

- Solve simple addition and subtraction problems including measures, using concrete objects, pictorial representation, and also applying their increasing knowledge of mental and written methods.

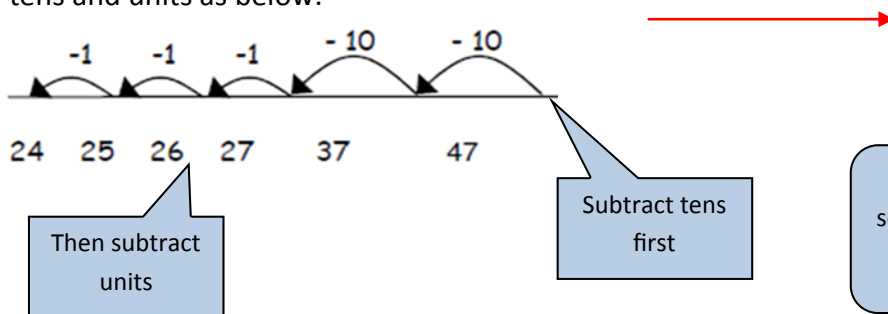- Read and write numbers to at least 100 in numerals and in words

Subtract with 2-digit numbers. Subtract on a number line by **counting back**, aiming to develop mental subtraction skills.

This strategy will be used for:

- **2-digit numbers subtract units** (by taking away/counting back) e.g. 36 - 7

- **2-digit numbers subtract tens** (by taking away/counting back) e.g. 48 - 30

- **Subtracting pairs of 2-digit numbers** (see below)

Subtracting pairs of 2-digit numbers on a number line:

47 - 23 = 24 Partition the second number and subtract it in tens and units as below:

Move towards more efficient jumps back, as below:

-3   -20

24 27   47

-1   -1   -1   - 10   - 10

24 25 26 27   37   47

Subtract tens first

Then subtract units
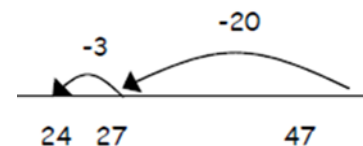
Combine methods with use of a hundred square to reinforce understanding of number value and order

Teaching children to **bridge through ten** can help them to become more efficient, for example 42 - 25

-3   -2   -20

17   20 22   42
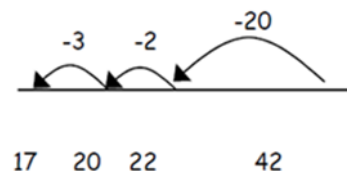
Mental strategy - subtract numbers close together by **counting on:**

$42 - 38 = 4$

+1   +1   +1   +1

37 38 39 40 41 42

Start with the smallest number and count on to the largest.
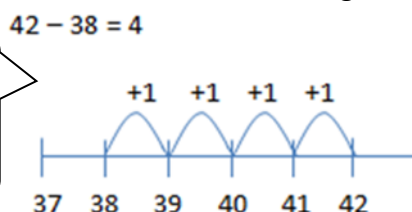
Many mental strategies are taught. Children are taught to recognize that when numbers are close together, it is more efficient to **count on** the difference. They need to be clear about the relationship between addition and subtraction.

Multiplication ✖ Year 2

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

Key skills for multiplication at Y2:

- Count in steps of 2, 3 and 5 from zero, and in 10s from any number.

- Recall and use multiplication facts from the 2, 5 and 10 multiplication tables, including recognising odds and evens.

- Write and calculate number statements using the x and = signs.

- Show that multiplication can be done in any order (commutative).

- Solve a range of problems involving multiplication, using concrete objects, arrays, repeated addition, mental methods, and multiplication facts.

- Pupils use a variety of language to discuss and describe multiplication.

Video clips:

Teaching for understanding of multiplication facts (youtube)

Practical multiplication and the commutative law (youtube)

Multiply using arrays and repeated addition (using at least 2s, 5s and 10s)

Use repeated addition on a number line:

- Starting from zero, make equal jumps on a number line to work out multiplication facts and write multiplication statements using x and + signs.

$4 \times 5 = …$ (4 lots of 5)

+5 +5 +5 +5

0   5   10   15   20

$4 \times 5 = 20$
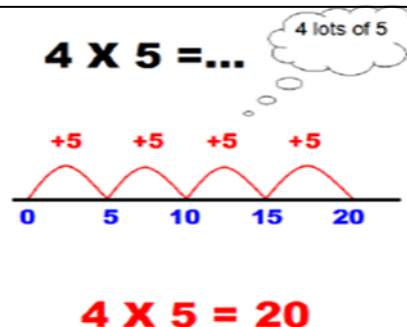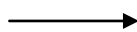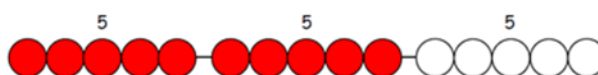
Use arrays

$5 \times 3 = 15$

$3 \times 5 = 15$

$5 \times 3 = 3 + 3 + 3 + 3 + 3 = 15$

$5 \times 3 = 5 + 5 + 5 = 15$

Use arrays to help teach children to understand the commutative law of multiplication, and give examples such as $3 \times \underline{} = 6$

Use practical apparatus:

$5 \times 3 = 5 + 5 + 5$

5   5   5

Mental recall:

Children should begin to **recall multiplication facts for 2, 5 and 10** times tables through practise in counting and understanding of the operation.

Division

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

Key number skills needed for division at Y2:

- Count in steps of 2, 3, and 5 from 0

- Recall and use multiplication and division facts for the 2, 5 and 10 multiplication tables, including recognising odd and even numbers.

- Calculate mathematical statements for multiplication and division within the multiplication tables and write them using the x, ÷ and = 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 contexts.

Group and share, using the ÷ and = sign

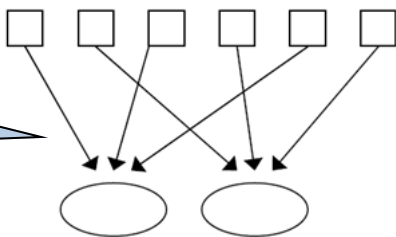Use objects, arrays, diagrams and pictorial representations, and grouping on a number line.

Arrays:
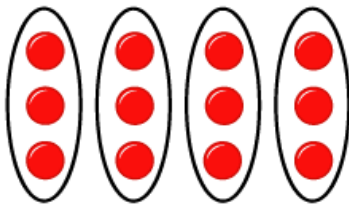
This represents 12 ÷ 3, posed as how many groups of 3 are in 12?

Pupils should also show that the same array can represent 12 ÷ 4 = 3 if grouped horizontally.

$$12 \div 3 = 4$$

Know and understand sharing and grouping:

6 sweets shared between 2 people, how many do they each get?

Grouping

Sharing

There are 6 sweets, how many people can have 2 sweets each?

Children should be taught to recognise whether a problem requires sharing or grouping.

Grouping using a number line:

Group from zero in equal jumps of the divisor to find out 'how many groups of __ in __?' Pupils could use bead strings or practical apparatus to work out problems like 'A CD costs £3. How many CDs can I buy with £12' **This is an important method** to **develop understanding of division as grouping.**

0 1 2 3 4 5 6 7 8 9 10 11 12
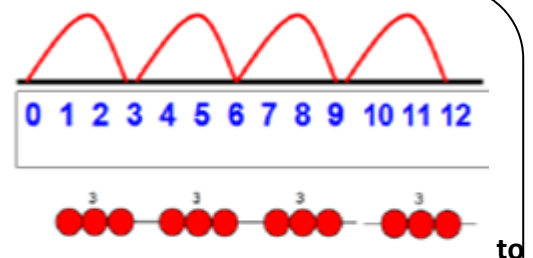
$$12 \div 3 = 4$$

Pose **12 ÷ 3** as '**How many groups of 3 are in 12?**'