

Addition, subtraction,
multiplication and division *in*

Year 3

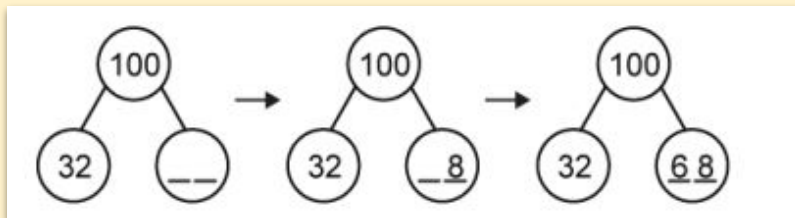
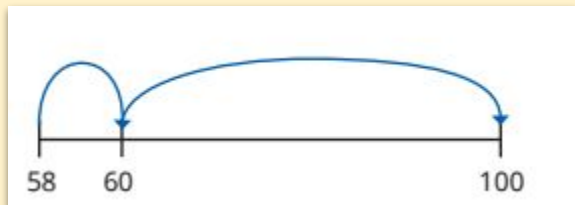
OVERVIEW of the four operations in Year 3

- In Year 3, pupils start to work with numbers up to 1,000
- They are expected to confidently **add** and **subtract** number facts that bridge 10, through continued practice (they would have started this learning in Year 2)
- Year 3 pupils are also expected to recall **multiplication** facts, and corresponding **division** facts, in the 10, 5, 2, 4 and 8 multiplication tables.
- They will also start to add and subtract up to three-digit numbers using columnar methods.
- All of this learning will also need to be applied in problem solving.

How we teach addition and subtraction

Calculate complements to 100, for example: **$58 + ? = 100$**

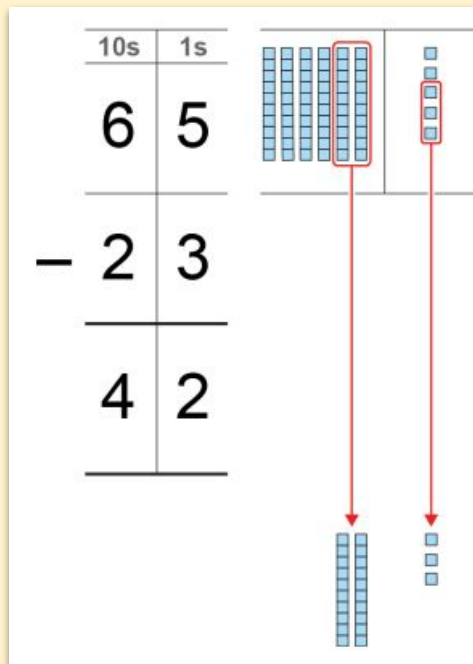
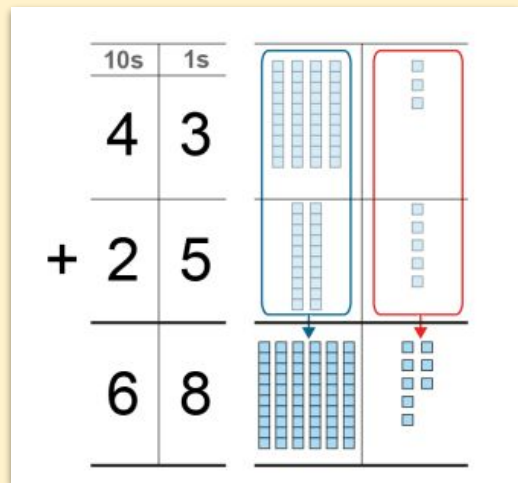
Why? When calculating complements to 100, pupils typically make an extra 'unit' of 10, making 110 instead of 100. When finding change from a whole number of pounds, pupils typically make an extra £1, for example, they incorrectly calculate the change due from £5 for a cost of £3.40 as £2.60



Language focus: First we make 10 ones. The ones digits add up to 1 ten, so we need 9 more tens.

How we teach addition and subtraction

Add and subtract up to three-digit numbers using column methods. **$58 + ? = 100$**



Language focus:

3 ones plus 5 ones is equal to 8 ones.

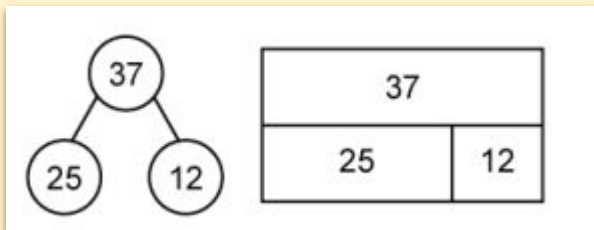
4 tens plus 2 tens is equal to 6 tens.

5 ones minus 3 ones is equal to 2 ones.

6 tens minus 2 tens is equal to 4 tens.

How we teach addition and subtraction

The inverse relationship between addition and subtraction; the commutative property of addition and the related property for subtraction.



$$25 + 12 = 37$$

$$12 + 25 = 37$$

$$37 = 25 + 12$$

$$37 = 12 + 25$$

$$37 - 12 = 25$$

$$37 - 25 = 12$$

$$25 = 37 - 12$$

$$12 = 37 - 25$$

Language focus:

"If we swap the values of the subtrahend and difference, the minuend remains the same."

addend + addend = sum

minuend - subtrahend = difference

How we teach addition and subtraction

Missing addend: $329 + \underline{\quad} = 743$
 $743 - 329 = \underline{\quad}$

Missing subtrahend: $477 - \underline{\quad} = 285$
 $477 - 285 = \underline{\quad}$

Missing minuend: $\underline{\quad} - 527 = 87$
 $527 + 87 = \underline{\quad}$

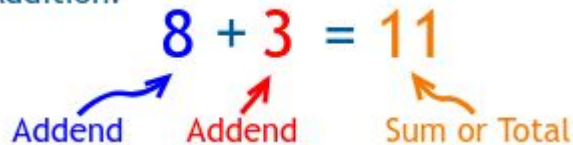
How we teach addition and subtraction

An important part of how we teach addition and subtraction in Year 3 is identifying whether an equation needs you to add or subtract.

To do this, understanding the key vocabulary is important:

addend **sum** **minuend** **subtrahend** **difference**

Addition:



$8 + 3 = 11$

The diagram shows the equation $8 + 3 = 11$. A blue arrow points from the word 'Addend' to the number 8. A red arrow points from the word 'Addend' to the number 3. An orange arrow points from the word 'Sum or Total' to the number 11.

Subtraction:



$8 - 3 = 5$

The diagram shows the equation $8 - 3 = 5$. A blue arrow points from the word 'Minuend' to the number 8. A red arrow points from the word 'Subtrahend' to the number 3. An orange arrow points from the word 'Difference' to the number 5.

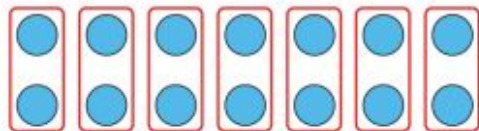
How we teach multiplication and division

At this stage, pupils will be developing fluency in the 5, 10, 2, 4 and 8 multiplication tables, so should be able to solve multiplication problems about groups of 5, 10, 2, 4 or 8. Pupils have already begun to learn that if the factors are swapped, the product remains the same.

Language focus:

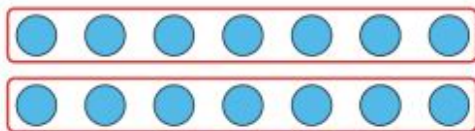
- Factor times factor is equal to product.
- The order of the factors does not affect the product.

How we teach multiplication and division



7 groups of 2

$$7 \times 2 = 14$$



2 groups of 7

$$2 \times 7 = 14$$

$$7 \times 2 = 2 \times 7$$

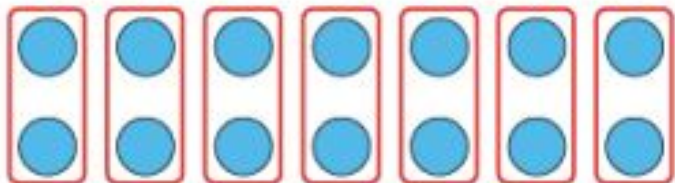
Language focus:

- Factor times factor is equal to product
- The order of the factors does not affect the product

- This means that pupils can use their knowledge that $7 \times 2 = 14$ to solve a problem about 2 groups of 7, even though they have not yet learned the 7 multiplication table.
- Pupils should already be solving division calculations using known division facts corresponding to the 5, 10, 2, 4 and 8 multiplication tables.
- They must also be able to use these known facts to solve both quotitive (grouping) and partitive (sharing) contextual division problems.

How we teach multiplication and division

I need 14 ping-pong balls. There are 2 ping-pong balls in a pack. How many packs do I need?



$$14 \div 2 = 7$$

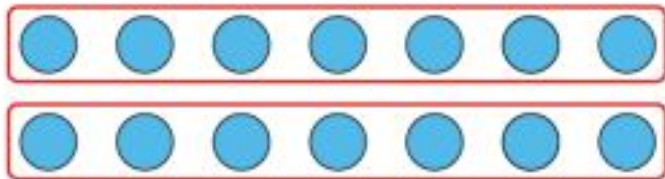
14						
2	2	2	2	2	2	2

Language focus:

- 7 times 2 is 14, so 14 divided by 2 is 7.
- 14 divided into groups of 2 is equal to 7.

How we teach multiplication and division

£14 is shared between 2 children. How much money does each child get?



$$14 \div 2 = 7$$

14	
7	7

Language focus:

- 7 times 2 is 14, so 14 divided by 2 is 7.
- £14 shared between 2 is equal to £7 each.

Pupil demonstrations

How we teach addition and subtraction

Missing sum: $269 + 435 =$

Missing minuend: $\underline{\quad} - 647 = 87$

$$647 + 87 = \underline{\quad}$$

There are 172 non-fiction books in the school library and 356 fiction books. How many books are there in the library altogether?

How we teach multiplication and division

- If one sweet costs 3p, how much do 8 sweets cost?
- I need to buy 32 metres of fencing to go around my garden. The fencing is sold in 8- metre lengths. How many 8-metre lengths do I need to buy?
- There are 24 strawberries in a tub. I share them equally between the 4 people in my family.
- How many does each person get? A gardener has 5 plant pots. She plants 6 seeds in each pot. How many seeds does she plant altogether?

Maths at home

Year 3

MATHS at home

To promote maths skills in children, encourage them to play maths puzzles and games.

Teach them to have a positive attitude and believe they can improve with effort rather than focus on speed and involve them in everyday activities involving numbers and measurements, such as shopping and cooking.

Here are some good websites to help families learn maths together:

MATHS at home (online resources)

- <https://www.nationalnumeracy.org.uk/helping-children-maths/family-maths-toolkit>
- <https://www.mathsontoast.org.uk/>
- <https://www.familymathstoolkit.org.uk/>
- <https://thirdspacelearning.com/blog/how-help-child-with-maths-at-home/>

MATHS at home (apps for Year 3 learners)

- <https://play.ttrockstars.com/ttrs/dashboard> Multiplication facts practice
- <https://www.topmarks.co.uk/maths-games/daily10> Mental maths practice
- <https://www.topmarks.co.uk/maths-games/hit-the-button> Mental maths practice
- <https://www.topmarks.co.uk/ordering-and-sequencing/caterpillar-ordering> Ordering numbers - select 0 to 999
- https://mathsframe.co.uk/en/resources/resource/37/placing_numbers_on_a_number_line Placing numbers on a number line (select to 1,000)
- <https://www.topmarks.co.uk/learning-to-count/place-value-basketball> Place value basketball - understanding hundreds, tens and ones Select up to 999
- <https://nrich.maths.org/students/primary> A range of games and problem solving activities
- <https://www.iseemaths.com/games-resources/> A range of games and problem solving activities

Key takeaways

Your child needs to be secure and confident in their foundational skills.

- Understanding and working with three-digit numbers, including the value of each digit
- Mastering basic addition and subtraction facts - solving contextual problems with these
- Recall their multiplication facts and associate division facts for the $2x$, $3x$, $4x$, $5x$, $8x$ and $10x$

Key takeaways

- Encourage a positive maths attitude
- Try to incorporate maths into daily activities such as cooking, shopping or playing board games
- Support home learning by offering guidance, but encourage independence by allowing your child to solve problems on their own
- Use maths apps and games
- Provide real-world examples
- Celebrate achievements - celebrate the small victories, boost their confidence and motivation
- Communicate with teachers