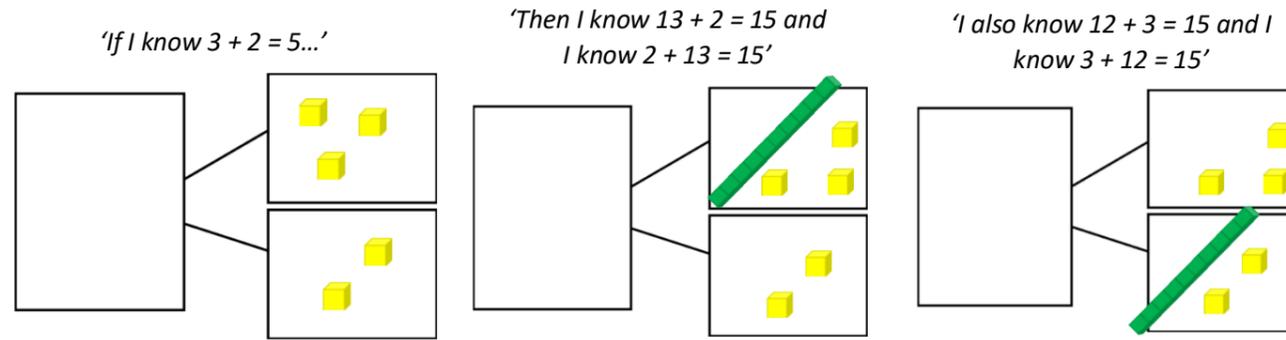


Year 2 Unit 2: Add and subtract 2-digit numbers (2 weeks)

Before you start...

- How confident are pupils in partitioning numbers into tens and ones and identifying their values?
- What experiences have pupils had with using part-whole models to describe addition and subtraction equations?
- Are pupils fluent in recalling their number bonds to and within ten?

Video: Deriving facts from known facts



No regrouping

Recalling all number bonds within 20 is an end of Year 2 objective. Therefore, within this Autumn unit, the numbers have purposely been designed to not require regrouping (e.g. $24 + 45$, $49 - 26$). This allows pupils to begin developing fluency when deriving facts within 100, without the additional demands of calculating number bonds within 20 that bridge ten (e.g. $7 + 8$, $13 - 6$). Addition and subtraction requiring regrouping will be covered in Unit 9, once pupils become more secure with recalling number bonds within 20. **It is imperative that number bonds within 20 are practiced regularly in Maths Meetings before the Spring term Unit 9.**

Using known facts within ten to derive facts within 20

- L1 Use number bonds within 20 in addition
- L2 Use number bonds within 20 in subtraction

Using the Big Picture as real-life stimuli, pupils engage in mathematical thinking by deriving addition and subtraction equations within 20 using their knowledge of number bonds within 10. Encourage discussion around similarities and differences within part-whole relationships; Dienes on part-whole models emphasise the pattern in known facts and derived facts. If you are unfamiliar with the part-whole model, use the videos to become confident with coordinating your actions and words.

? How will you make connections to commutativity to encourage pupils to find all possibilities when deriving facts?

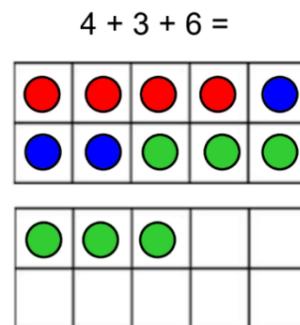
Adding and subtracting tens or ones

- L3 Add and subtract ones from a 2-digit number
- L4 Add and subtract multiples of ten
- L5 Add and subtract tens from a 2-digit number

Pupils use their known facts within ten to now extend to deriving facts within 100. Pupils continue to demonstrate mental calculations using Dienes on a part-whole model. When calculating with multiples of ten, emphasise the language structure related to unitising 'If I know **three ones** and **four ones** is equal to **seven ones**, then **three tens** and **four tens** is equal to **seven tens**' – to support pupils' fluency.

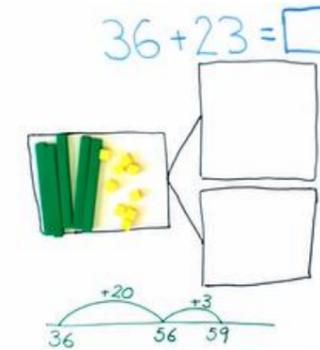
? What questions and prompts will you use throughout the unit to encourage pupils to use known facts to mentally add and subtract 1 and 2-digit numbers?

There is one suggested consolidation lesson within this unit. However, there is plenty to explore so use your professional judgement and incorporate further consolidation lessons as necessary. You may wish to pre-teach number bonds within ten to ensure pupils can fluently recall these to derive facts within 20 and 100. Include further lessons to explore any of the mental strategies in more detail, before moving onto another strategy in subsequent planned lessons.



Variation and task design

Tasks in this unit have purposefully been designed with variation in mind – equations have been deliberately chosen to evoke pattern seeking. Encourage pupils to ask themselves 'What's the same? What's different?' about the groups of equations. The purpose is for pupils to pay attention to the underlying mathematical structures. To find out more about variation have a look at our [articles](#).



Video: Mental addition using Dienes (partitioning both numbers)

Video: Mental subtraction using Dienes (partitioning both numbers)

Video: Mental addition using Dienes (partitioning one number)

Video: Mental subtraction using Dienes (partitioning one number)

Calculating with three numbers

- L9 Add three 1-digit numbers

Pupils apply their number sense to decide the most efficient order to add three 1-digit numbers. Commutativity can be emphasised here – it doesn't matter which order the numbers are added, the whole remains the same. Provide opportunities for pupils to share their calculation method, justifying their choice. Suggested strategies include number bonds to 10 or 20, doubles and near doubles.

? How can coloured counters on tens frames help pupils 'see' how the three numbers could be combined?

Adding and subtracting tens and ones

- L6 Add two 2-digit numbers
- L7 Subtract 2-digit numbers
- L8 Add and subtract 2-digit numbers

Pupils combine their knowledge of adding or subtracting only ones or only tens and now calculate with two 2-digit numbers. Making connections between different mental strategies is key here – partitioning both numbers to add or subtract, compared to partitioning only the number to be added or subtracted. Dienes, part-whole models and number lines allow pupils to demonstrate their mental calculations. This supports discussion about pupils' different methods.

? As no regrouping is required, what opportunities will you provide for pupils to explore that either the tens or ones can be added first and the whole stays the same?