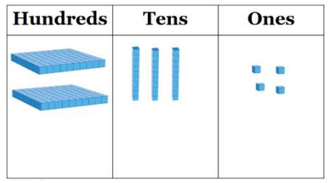
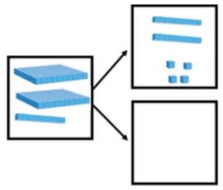
Year 3 Unit 4: Addition & subtraction (3 weeks)

Before you start…

- *Consider pupils' understanding of previous units on number and calculation. Were there any difficulty points?*
- *How familiar are pupils with representations of number such as Dienes blocks, number lines and bead strings? Do you need to spend time exploring these before the unit?*





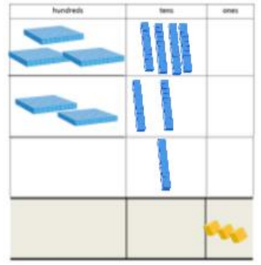
A beautiful mind

Ensure that mental strategies continue to feature in the rest of the unit where focus shifts to written strategies. Select mental calculations to estimate and check.

***Videos:** Column addition with Dienes*

Estimation:
350 + 230 = 580

	3	4	6
+	2	2	7
		1	
=			3



Developing mental strategies for addition and subtraction

L1 Add or subtract single digit numbers to or from a 3-digit number
L2 Adding 3-digit number and multiple of 10
L3 Subtracting a multiple of 10 from a 3-digit number
L4 Add or subtract a multiple of 100 to and from a 3-digit number
L5 Adding or subtracting two 3-digit numbers (no regrouping)

Pupils use bead strings, Dienes and part-whole models to enable them to build upon their existing understanding of number bonds and place value, applying this in order to support addition and subtraction, where regrouping is required. Encourage pupils to use existing known facts to allow more efficient calculating. Connections should be made between the lessons and the similarities/differences in strategies.

? *How will you make explicit connections with the calculation strategies explored from Unit 1 and understanding developed in Key Stage 1?*

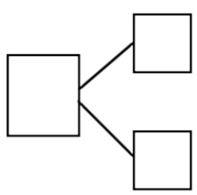
Calculating with column addition

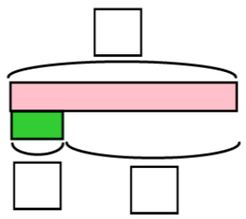
L7 Applying rounding for estimating
L8 Adding two 3-digit numbers (regrouping in one column)
L9 Adding two 3-digit numbers (regrouping in multiple columns)

Understanding of rounding numbers is applied in the context of selecting calculations to estimate. Discussion can be held around the different options for estimating and if the actual result will be greater or less than the estimate. Understanding the method of column addition is supported with Dienes blocks, using them to explain each step. Time is spent exploring and correcting common errors or potential misconceptions.

? *How will you develop estimation as a habit?*
? *How will you encourage pupils to use their number bonds mentally to add rather than counting the Dienes equipment one by one?*

There are two consolidation lessons in this unit. Use assessments to make an informed decision about where in the unit to use this.

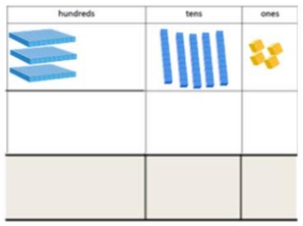




Trouble shooting

There are a number of common errors, particularly associated with column subtraction. Errors such as not identifying that regrouping needs to occur can be addressed by the use of manipulatives such as Dienes to reinforce the value of each column.

	3	5	4
−	1	2	6
	2	3	2



***Videos:** Column subtraction with Dienes*

***Videos:** Column subtraction: Regrouping to regroup*

***Videos:** Additive bar models*

***Videos:** Comparative bar models*

Applying understanding to solve problems

L13 Solve word problems using addition and subtraction skills
L14 Word problems with tricky unknown values

Pupils then use addition and subtraction in order to help them to engage with and solve a range of word problems. To support problem solving, bar models used as tools for identifying a strategy to solve a problem. The power of the bar model is in building it as a way to explore the structure of the problem and time should be spent discussing and drawing these. Pupils are also exposed to non-standard word problems to demonstrate the value of the use of bar models where language is counter-intuitive to the operation required.

Calculating with column subtraction

L10 3-digit subtraction (regrouping tens to ones)
L11 3-digit subtraction (regrouping hundreds to tens)
L12 3-digit subtraction (regrouping in multiple columns)

Dienes continue to be a key resource as the focus changes to column subtraction. Time is dedicated to developing secure understanding of when regrouping is required and beginning to do this with increased confidence. Common errors are highlighted and used to deepen understanding of how the method works and links with existing understanding of addition and subtraction.

? *How will you ensure that pupils can articulate and define where and when to regroup? Which representations will support them in doing so?*

***Underline me**: a common strategy for word problems is underlining key vocabulary. However, similar language can be used in both operations leading to incorrect interpretation. Focus instead on what is known and what is unknown and how to represent this.*