Year 4 Unit 2: Addition and subtraction (3 weeks)
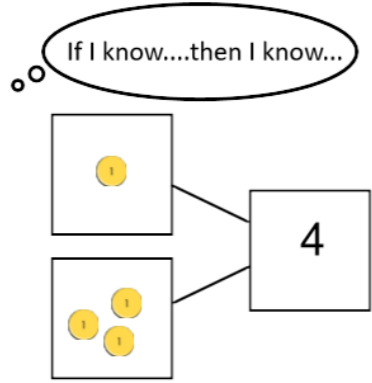
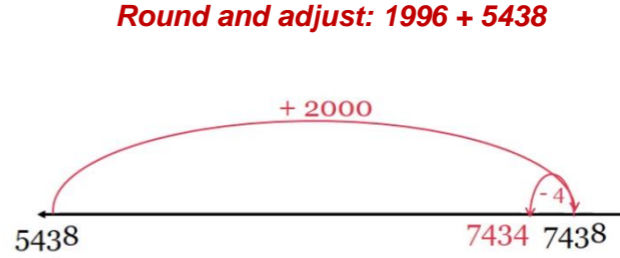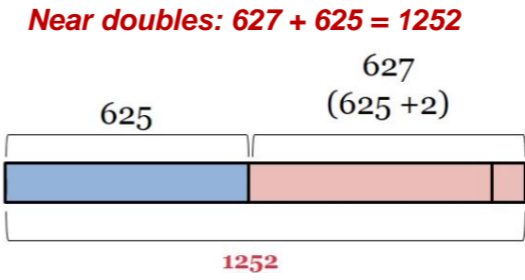**Video:** Exploring addition strategies.

Video: Exploring subtraction strategies.

Before you start…
- When working with 3-digit numbers, can pupils flexibly select efficient calculation strategies, including:
  - using known facts to derive new facts
  - partitioning
  - near doubles
  - round and adjust
  - finding the difference
  - column method

If I know....then I know...

4

Video: Finding and deriving a range of known facts

Near doubles: 627 + 625 = 1252

627
(625 +2)
625
1252

Round and adjust: 1996 + 5438

+ 2000
5438   7434 7438

Lesson 5 is the suggested time for consolidation. Ensure pupils are confident with a range of mental strategies before moving towards more formal methods.

Deriving facts from known facts
L1&2 Derive addition and subtraction facts

Applying their number sense, pupils use their knowledge of inverse, commutativity and scaling (by 10, 100 and 1000) to derive facts. When deriving calculations from known calculations, make connections to part-whole understanding. Encourage pupils to consider whether the part or whole has changed and the impact this will have on the calculation.

? How does the part-whole model representation draw attention to the connections between known and derived facts?
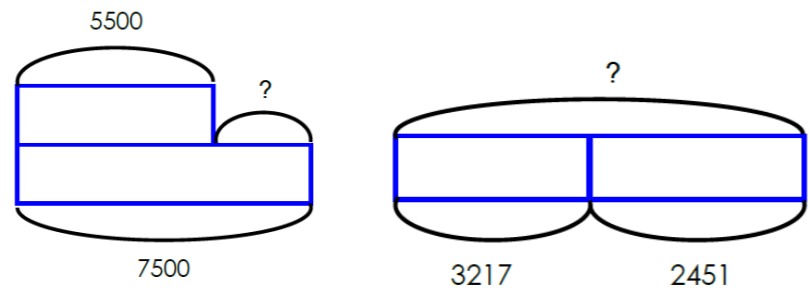
Exploring appropriate strategies
L3 Choose an appropriate addition strategy
L4 Choose an appropriate subtraction strategy

Pupils continue to apply their number sense, working flexibly to choose efficient strategies for given calculations. Strategies may include using known facts to derive facts, partitioning, near doubles, round and adjust and finding the difference. Make connections between pupils' strategies, encouraging them to justify their reasons for choosing a strategy.

? How will you encourage pupils to evaluate, probe and respond to their peers' justifications of strategy choice?

Progression in calculations
Use this guidance document to find out more about the additive strategies, structures and representations (including bar models) explored in this unit.

Video: Column addition with place value counters

Video: Column subtraction with place value counters

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Continue to use Dienes rather than moving onto place value counters if pupils do not have a deep understanding of regrouping yet (e.g. 10 tens = 1 hundred and vice versa).

Lesson 14 and 15 is the suggested time for consolidation. You may wish to explore non-standard one and two-step word problems in more depth, providing pupils the opportunity to select appropriate mental and formal methods learnt in this unit.

5500
?
7500

?
3217   2451

Solving word problems
L11&12 Solve one-step problems
L13 Solve two-step problems

Pupils apply their learning from the entire unit, selecting appropriate strategies to solve additive word problems. First pupils explore 'part-whole' structures, then 'comparison' structures, before looking at both structures in the context of two-step word problems, drawing bar models to represent the known and unknown values.

? What thinking will you model aloud? What will you say? When?

Applying formal column methods
L6&7 Use column addition for 4-digit numbers
L8&9 Use column subtraction for 4-digit numbers
L10 Subtracting from multiples of 1000

Pupils use the column method to add and subtract. Pupils initially represent the method using Dienes on a place value chart. As Dienes can be cumbersome with larger numbers, place value counters are then introduced. Throughout this learning, make use of rounding skills when estimating answers beforehand and develop the habit of checking the answer is reasonable. This is key for pupils to see if they've made any arithmetic errors when using the column method. Pupils go on to use the column method when subtracting from multiples of 1000 in order to highlight the limitations of this method. In this case, the need for multiple regrouping may lead to arithmetic errors. Use this as an opportunity to make connections to selecting more efficient methods which have been explored in lessons 1-4.

? How can you find out learners' current understanding of the column method? What questions or tasks might you use?
? How will you encourage pupils to use number bonds rather than counting the equipment?

Video: Constructing bar models

You may wish to adapt the learning sequence to build in deliberate errors such as a) placing the regrouped units in the wrong place b) inaccurately representing the number or c) not recording the regrouping/including it when completing the calculation.