**This Learning Progression begins at Foundation Level of the Victorian Curriculum and concludes at Level 4. Eight progressions are provided in this span.**

*Description:* This Learning Progression describes how a student becomes increasingly able to choose and use additive computational strategies for different purposes. The transition from counting by one to more flexible methods of dealing with quantity, where numbers are treated as the sums of their parts, is a critical hurdle to be addressed in students becoming fluent users of number. Rather than only focusing on the speed of producing correct answers, an emphasis on attending to the relation of given numbers to sums and differences is needed for flexibility. This supports the development of additive strategies such as adding the same to both numbers to reach an easier calculation (47 – 38 = 49 – 40).

The capacity to make reasonable adjustments to numbers is essential in estimating. Estimating is not a basic skill as it requires students to be able to conceptualise and mentally manipulate numbers. The estimation process involves selecting numbers to simplify mental manipulation.

*Related Numeracy Learning Progressions*: Additive strategies apply equally to subtraction, as can be seen in ‘Giving change’ in the *Understanding money* Learning Progression.

*Details of progression provide nuanced and detailed descriptions of student learning – what students can say, do, make or write. Examples of student learning in each step are not hierarchical, nor are they to be used as a checklist.*

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| **Victorian Curriculum Foundation Level**  |  | **Victorian Curriculum Level 4** |
| **Emergent strategies** The student: * combines two groups of objects and attempts to find the total
* compares two quantities of up to 10 and state which group has more.
 | **Perceptual strategies** The student: * counts items that can be perceived by ones to find the total of two groups with one-to-one matching of number words and objects
* builds and subtracts numbers by using objects or fingers
* makes combinations to form numbers up to 10.
 | **Figurative (imagined units)** The student: * solves additive tasks involving two concealed collections of items by visualising, counting from one to determine the total.
 | **Counting on (by ones)** The student: * treats a number word as a completed count when solving problems (‘I have 7 apples. I want 10. How many more do I need?’ Treats the 7 as a completed count)
* uses a strategy of count-up-from to calculate addition (to find 6 + 3, responds *6, 7, 8, 9. It's 9*)
* uses a strategy of count-up-to to solve missing addends tasks (to solve 6 + ? = 9, responds *6 ... 7, 8, 9. It's 3*).
 | **Counting back (by ones)** The student: * uses count-down-from for subtraction tasks (9 – 3 = ?, *9 ... 8, 7, 6. It equals 6*)
* uses count-down-to to calculate (9 take away something equals 6, responds *9 ... 8, 7, 6 ... It's 3*)
* finds the difference between two numbers less than 20
* counts back to find the difference between two quantities where the difference is no greater than 4.
 | **Flexible strategies with combinations to 10** The student: * uses a range of non–count-by-one strategies when adding or subtracting two or more numbers (bridging to 10, near doubles)
* uses part-whole construction of number to partition a whole number into parts (partitions 7 into 5 and 2, 6 and 1, 4 and 3)
* applies inverse relationship of addition and subtraction.
 | **Flexible strategies with two-digit numbers** The student: * applies knowledge of 10 as a unit to add and subtract 2 two-digit numbers (jump strategy, split strategy or compensation)
* manipulates tens and ones flexibly for addition and subtraction (to add 45 and 37, adds the tens on 45 … 55, 65, 75, then partitions the 7 into 5 and 2, adds the 5 to make 80 and 2 more to make 82)
* uses part-whole knowledge of numbers to 20 to calculate two-digit addition and subtraction (when finding 53 – 27, recognises the subtraction within as 13 – 7 and regroups the 53 into 40 and 13 and the 27 into 20 and 7).
 | **Flexible strategies with three-digit numbers and beyond** The student: * manipulates hundreds, tens and ones flexibly to add and subtract 2 three-digit numbers (to add 250 and 457, ungroups the 250 into 2 hundreds and 5 tens, responds *457 plus 2 hundred is 657, plus 50 is 707*)
* manipulates place value of numbers flexibly in regrouping for addition of three-digit numbers and beyond (when adding 650 and 550, regroups 650 as 600 and 50, adds 50 to 550, then doubles 600)
* manipulates place value of numbers flexibly in regrouping for subtraction (when solving 3000 – 260, treats the 3000 as 2700 and 300 to aid in mental calculation)
* regroups for subtraction involving trading or exchange of units with different place values
* chooses and uses multiple strategies for solving everyday problems involving addition and subtraction.
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Student learning in numeracy has links beyond Mathematics in the Victorian Curriculum F–10. Teachers are encouraged to identify links within their teaching and learning plans.