**This Learning Progression begins at Level 4 of the Victorian Curriculum and concludes at Level 7. Four progressions are provided in this span.**

*Description:* This Learning Progression focuses on understanding the use of place value in operating with decimals. Decimals are better suited to estimating magnitude than fractions because decimals use the base-ten system to record quantity and fractions do not. However, the base-ten system used with whole numbers can also contribute to misconceptions with decimals. For example, recognising that whole numbers with more digits are always larger and applying this to decimals may lead to incorrectly believing 0.75 is larger than 0.8 and 0.320 is larger than 0.32. Understanding that fractions with larger denominators result in smaller magnitudes and longer decimals contain smaller parts can lead to believing longer decimals must be smaller than shorter decimals. Decimals are commonly used to record metric quantities and have applications in areas that range from nutritional advice to expressing tolerances in precision engineering. (NB: The notation for fractions is distinct from the place value notation used with decimals. This progression treats the development of decimal notation separately from the development of common fractions).

*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 Level 4** |  | **Victorian Curriculum Level 7** |
| **Understanding positional value of decimals** The student:* uses knowledge of positional value of numbers to add and subtract decimals of up to three decimal places.
 | **Understanding and estimating relative size of decimals** The student:* interprets the relative size of decimals, and rounds to estimate answers
* estimates the size of answers without doing the exact calculations (1.23 + 3.4 cannot be 1.57 because the sum must be greater than 4).
 | **Understanding the effects of multiplication and division with decimals** The student:* understands that multiplying and dividing decimals by 10, 100, 1000 changes the positional value of the numerals
* explains that multiplication does not always make the answer larger (when multiplying whole numbers by a decimal less than 1, 15 x 0.5 = 7.5)
* connects and converts decimals to fractions to assist in mental computation involving multiplication (to find 16 x 0.25, recognises 0.25 as a quarter, and finds a quarter of 16)
* connects and convert decimals to fractions to assist in mental computation involving division (to determine 0.5 ÷ 0.25, recognises the answer is 2 as there are two quarters in one-half)
* recognises the equivalence of decimals to benchmark fractions (1/4 = 0.25, 1/2 = 0.5, 3/4 = 0.75, 1/10 = 0.1, 1/100 = 0.01).
 | **Flexible strategies for multiplication and division of decimals** The student:* uses knowledge of positional value of numbers to multiply and divide decimals
* uses knowledge of approximate answers to check accuracy of solutions when using a variety of strategies.
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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.