**Transition: Advanced Additive to Advanced Multiplicative Domain: Addition and Subtraction**

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| **Achievement Objectives** | **Number and Algebra: Level Four** |
| Number Strategies and Knowledge:   * Use a range of multiplicative strategies when operating on whole numbers. * Understand addition and subtraction of fractions, decimals, and integers. * Apply simple linear proportions, including ordering fractions. * Know the relative size and place value structure of positive and negative integers and decimals to three decimals. |

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| **Key Teaching Ideas** | **Problem Progression** | **References** | **Knowledge being developed** | **Resources** |
| To add or subtract fractions, they must be renamed to have a common denominator  (Key Idea #1) | 1/2 + 1/4 = 2/4 + 1/4  2/3 – 1/6 = 4/6 - 1/6  3/4 + 1/5 =  15/20 + 4/20  7/8 – 5/6 =  21/24 – 20/24 | ***Teaching Fractions Decimals and Percentages (Book 7)***  [Comparing Apples With Apples](https://nzmaths.co.nz/node/967) (65) | Say the forwards and backwards decimal word sequences by thousandths, hundredths, tenths, ones, tens, etc, starting at any whole number. | ***Teaching Number Knowledge (Book 4)***  [Number Fans](https://nzmaths.co.nz/node/1039) (4)  [Place Value Houses](https://nzmaths.co.nz/node/1042) (5)  [Number Hangman](https://nzmaths.co.nz/node/1043) (5)  [Skip-counting on the Number Line](https://nzmaths.co.nz/node/1055) (11)  [Hundreds Boards And Thousands Book](https://nzmaths.co.nz/node/1065) (16)  ***Figure It Out***  N 3-4 [Changes, Highs and Lows](https://nzmaths.co.nz/node/3254)  (6) |
| Decimal fractions arise out of division  (Key Idea #2) | 8 ÷ 5 =  ☐ wholes + ☐ tenths  4 ÷ 10 =  ☐ wholes + ☐ tenths | ***Teaching Addition and Subtraction (Book 5)***  [Introducing Decimal Fraction Place Value](https://nzmaths.co.nz/node/1105) (69) | Say the number one-thousandth, one-hundredth, one-tenth, one, and ten, etc, before and after any given whole number. | ***Teaching Number Knowledge (Book 4)***  [Number Fans](https://nzmaths.co.nz/node/1039) (4)  [Skip-counting on the Number Line](https://nzmaths.co.nz/node/1055) (11) [Lucky Dip](https://nzmaths.co.nz/node/873) (13) |

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| **Key Teaching Ideas** | **Problem Progression** | **References** | **Knowledge being developed** | **Resources** |
| The “ten for one” and “one for ten” canons apply when adding and subtracting with decimal fractions (one-decimal-place-fractions)  (Key Idea #3) | 1.8 + 2.7  0.4 + 20.8  1.3 – 0.9  16 – 3.9 | ***Teaching Addition and Subtraction (Book 5)***  [Adding With Decimal Fractions](https://nzmaths.co.nz/node/1107) (71)  [Subtraction with tenths](https://nzmaths.co.nz/node/1108) (71)  ***Teaching Addition and Subtraction (Book 7)***  [How Can Two Decimals So Ugly Make One So Beautiful?](https://nzmaths.co.nz/node/1113) (45) | Recall the number of groupings of tens, hundred, and thousands that can be made from a number of up to seven digits. | ***Teaching Number Knowledge (Book 4)***  [Number Hangman](https://nzmaths.co.nz/node/1043) (5)  [Tens in Hundreds and More](https://nzmaths.co.nz/node/1082) (27)  [Estimating](https://nzmaths.co.nz/node/1080) (25)  ***Figure It Out***  N 7/8 4.2 [A Million Grains of Rice](https://nzmaths.co.nz/node/3372) (4) |
| Subtraction can produce negative numbers.  (Key Idea #4) | +5 - +7  +1 - +32  -2 + +5  -99 + +102  +5 - -7  -99- -1 1/4 | ***Teaching Addition and Subtraction (Book 5)***  [Dollars and Bills](https://nzmaths.co.nz/node/1028) (73)  [Dropping and Rising Temperatures](https://nzmaths.co.nz/node/25704) (73)  [Bucket Balance](https://nzmaths.co.nz/node/25705) (74)  ***Teaching Algebraic Thinking and Number Sense (Book 8)***  [6 Minus 8 Does Work!](https://nzmaths.co.nz/node/999) (31)  ***Figure It Out***  N3-4.1 [Walking the Plank](https://nzmaths.co.nz/node/3270) (23)  N3-4.3 [The Volcanoes Erupt](https://nzmaths.co.nz/node/3326) (20)  N3-4.3 [Chilly Heights](https://nzmaths.co.nz/node/3327) (22)  N7/8 4.4 [It’s a Try](https://nzmaths.co.nz/node/3472) (8)  N7/8 4.4 [Lifting Weights](https://nzmaths.co.nz/node/3473) (9)  N7/8 4.4 [Integer Zap](https://nzmaths.co.nz/node/3475) (10)  N7/8 4.4 [Shifty Subtraction](https://nzmaths.co.nz/node/3480) (15)  N7/8 4.6 [Judo Competition](https://nzmaths.co.nz/node/3570) (14) | Order decimals to three places. | ***Teaching Number Knowledge (Book 4)***  [Reading Decimal Fractions](https://nzmaths.co.nz/node/1048) (8)  [Card Ordering](https://nzmaths.co.nz/node/1057) (12)  [Arrow Cards](https://nzmaths.co.nz/node/1058) (13)  [Rocket - where will I fit?](https://nzmaths.co.nz/node/1060) (15)  [Squeeze - Guess My Number](https://nzmaths.co.nz/node/1064) (15)  [Bead Strings](https://nzmaths.co.nz/node/1066) (17)  [Who wins?](https://nzmaths.co.nz/node/1071) (20)  ***Figure It Out***  N 7/8 4.3 [Going for Gold!](https://nzmaths.co.nz/node/3429) (12)  L7/8 L.1 [Up the Ladder](https://nzmaths.co.nz/node/4195) (15) |

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| **Knowledge being developed** | **Resources** |
| Round whole numbers and decimals, with up to two places, to the nearest whole number, or tenth. | ***Teaching Number Knowledge (Book 4)***  [Swedish Rounding](https://nzmaths.co.nz/node/1083) (28)  [Sensible Rounding](https://nzmaths.co.nz/node/1084) (28)  ***Figure It Out***  NS 7/8 [Number Scavenge](https://nzmaths.co.nz/node/10793) (6)  NS 7/8 2 [Time Versus Money](https://nzmaths.co.nz/node/4216) (7) |
| Carry out column addition and subtraction for whole numbers and decimals. | ***Figure It Out***  Ns 7/8 2 [Same Answer Every Time!](https://nzmaths.co.nz/node/4220) (11) |