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.

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 (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 (4) Place Value Houses (5) Number Hangman (5) Skip-counting on the Number Line (11) Hundreds Boards And Thousands Book (16) ***Figure It Out*** N 3-4 Changes, Highs and Lows (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 (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 (4) Skip-counting on the Number Line (11) Lucky Dip (13)

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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 (71) Subtraction with tenths (71) ***Teaching Addition and Subtraction (Book 7)*** How Can Two Decimals So Ugly Make One So Beautiful? (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 (5) Tens in Hundreds and More (27) Estimating (25) ***Figure It Out*** N 7/8 4.2 A Million Grains of Rice (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 (73) Dropping and Rising Temperatures (73) Bucket Balance (74) ***Teaching Algebraic Thinking and Number Sense (Book 8)*** 6 Minus 8 Does Work! (31) ***Figure It Out*** N3-4.1 Walking the Plank (23) N3-4.3 The Volcanoes Erupt (20) N3-4.3 Chilly Heights (22) N7/8 4.4 It's a Try (8) N7/8 4.4 Lifting Weights (9) N7/8 4.4 Integer Zap (10) N7/8 4.4 Shifty Subtraction (15) N7/8 4.6 Judo Competition (14)	Order decimals to three places.	***Teaching Number Knowledge (Book 4)*** Reading Decimal Fractions (8) Card Ordering (12) Arrow Cards (13) Rocket - where will I fit? (15) Squeeze - Guess My Number (15) Bead Strings (17) Who wins? (20) ***Figure It Out*** N 7/8 4.3 Going for Gold! (12) L7/8 L.1 Up the Ladder (15)

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Round whole numbers and decimals, with up to two places, to the nearest whole number, or tenth.	***Teaching Number Knowledge (Book 4)*** Swedish Rounding (28) Sensible Rounding (28) ***Figure It Out*** NS 7/8 Number Scavenge (6) NS 7/8 2 Time Versus Money (7)
Carry out column addition and subtraction for whole numbers and decimals.	***Figure It Out*** Ns 7/8 2 Same Answer Every Time! (11)

