To Proficiency and Beyond, A strategic Approach to Addition and Subtraction Grades 3 -5

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The best strategies are:

- **Efficient** (*They have few steps*)
- Flexible (They can be varied)
- Generalizable (They can be used to operate on greater numbers efficiently)



TYPES OF ADDITION AND SUBTRACTION



90 - 15	95 - 20	90 - 25	95 - 30	90 - 35			
80-15	85-20	80-25	85 - <u>3</u> 0	80-35			
70-15	75-20	70-25	75-30	70-35			
60-15	65-20	60-25	65-30	60-35			
50-15	55-20	50 - 25	55 - 30	50-35			
40 - 15	45 - 20	40 - 25	45 - 30	40 - 35			

Up or Down

Cube A: 92, 82, 72, 62, 52, and 42 Cube B: 17, 27, 37, 17, 27, and 37

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Fundamentals

Up or Down Again

Cube A: 18, 28, 38, 18, 28 and 38 Cube B: 93, 83, 73, 63, 53, and 43

NUMBER FACT STRATEGIES

ADDITION

- Count-on 1, 2 and 0
- Doubles and near doubles
- Make ten

SUBTRACTION

Think addition





Extensions Across Grades

Begin with a fact strategy.

Strategies	First Extension	Further Extensions	Decimal Extensions	
Count-on 6 + 1	Count-on 16 + 1	Count-on 26 + 21	Count-on 3.6 + 2.1	
9+2	19 + 2	29 + 12	2.9 + 1.2	
Use doubles 7 + 7	Use doubles 25 + 25	Use doubles 27 + 27	Use doubles 2.5 + 2.5	
6 + 5	26 + 25	126 + 125	1.26 + 1.25	
Bridge-to-ten	Bridge-to-ten	Bridge-to-ten	Bridge-to-ten	
9 + 4	39 + 4	198 + 25	1.98 + 0.06	



Total Two

- 1		-	
117	84	128	139
76	59	77	104
106	47	95	99
68	114	67	85
98	76	66	78
55	103	87	95

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large to make cards more manages

		Numeral Carc	Operation Cards		
	24	36	45	+23	+31
	53	72	86	+42	+53
	24	36	45	+23	+31
	53	72	86	+42	+53
	24	36	45	+23	+31
	53	72	86	+42	+53

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Л	4	3	2	_1	Round	
					1st Score	
					2nd Score	Play
					Total	er Two
					How close to 100?	
					Running Total	

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Player One

	Running Total					
	How close to 100?					
	Total					
гау	2nd Score					
	1st Score					
	Round	Ļ	2	S	4	5

Over and Out

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Take or Tally

Name:



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Game directions

To Proficiency and Beyond, A Strategic Approach to Addition and Subtraction Grades 3 -5

<u>Up or Down</u>

Materials:

Cube A: 92,82,72,62,52, and 42; cube B: 17,27,37,17,27,and 37; and Up or Down game board The aim is to arrange three counters adjacently in a horizontal, vertical, or diagonal line.

- The first player rolls the number cubes.
- The player says the subtraction sentence represented by the cubes, then figures out and says an equivalent subtraction sentence.
 - Example: Reece rolls 42 and 17, and says 42 take away 17 is the same as 40 take away 15 or 45 take away 20.
- The players states the difference before claiming a corresponding space on the game board by covering it with a counter. If both choices are unavailable, the player misses a turn.
 - Example: Reece says, the answer is 25 and claims either 40-15 or 45-20 on the game board.
- The other player(s) has a turn.

Up or Down Again

Materials:

One cube: 18,28,38,18,28, and 38

Another cube: 93,83,73,63,53, and 43

The directions are the same as Up or Down but this time the students verbalize the equivalent number sentence and cover the answer.

Total Two

Materials:

One set of numeral cards, one set of operation cards, and the Total Two game board The aim is to arrange three counters adjacently in a horizontal, vertical, or diagonal line,

- The two sets of cards are shuffled and placed face down in two separate stacks.
- The first player draws two red cards and two yellow cards, and from these chooses a red and a yellow combination that will add to give a total on the game board.
 - Example: Ally draws two red cards showing 36 and 53, and two yellow cards showing +31 and +53. She can make a combination of 36 + 31, 36 + 53, 53 + 31, or 53 + 53.
- After deciding which combination to use, the player claims the total on the game board by covering it with a counter. If all possible totals are unavailable, the player misses a turn.
- The other player has a turn.

Over and Out

Materials: Three standard number cubes showing the numerals 1-6, Over and Out game board. The aim is to have lowest running total at the end of the game.

- The first player rolls the three number cubes and considers all the possible two-digit numbers that can be created using these numbers.
 - Example: Naomi rolls 3, 4, and 6. She could make 34, 36,43, 46, 63 or 64.
- The player choses and records one two digit number in the 1st Score column on the score sheet.
- The second player has a turn.

- The first player rolls again, then chooses and records another two-digit number in the 2nd Score column.
- The second player has a turn.
- The players add the two scores and records the total.
- The player calculates and records how close their total was to 100. A running total of these amounts is kept. If the player scores over 100 in any round, Over is written in the How close to 100 column and 50 is added to the running total.

Take or Tally

Materials: Cube A: 20, 30, 40, 20, 30, and 40; Cube B: 175, 165, 155, 145, 135, 125; Take or Tally game board (one per player).

The aim is to make twelve complete number sentences before making a total of ten tallies.

- The first player rolls the two number cubes.
- The player writes these numbers in one of the number sentences on their game board to make it true.
 - Example: Darren rolls 40 and 145. He completes the number sentence 185-40=145.
- If the numbers rolled cannot be used, the player makes a tally at the bottom of their game board.
- The other player has a turn.