Fourth and Fifth Grade Strategies – Addition and Subtraction*

Strategies the students will be using will vary depending on the size of the number. The focus is on grouping numbers and not counting by ones.

*By the end of 4th grade the students should have at least two efficient ways to solve multi-digit problems mentally or with some recording for addition and subtraction.

Examples of mental strategies and ways to record or keep track: Knowing the combinations to 10 is important for the following strategies. It is also important that they know how to get to 100 and 1000**. Students will develop different strategies for different problems. Students do not use borrowing and carrying; instead they look at the whole number and work with place value.

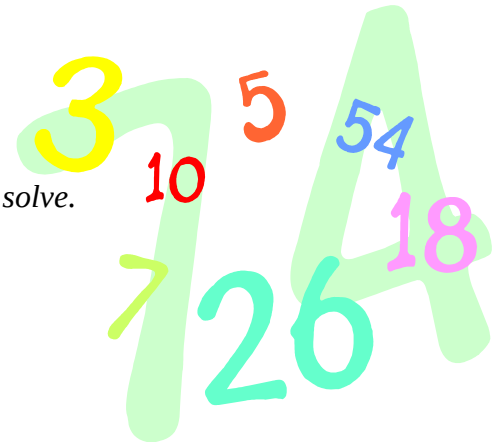
Addition: *256 + 687*

Adding left to right (expanded notation)
256 + 687
200 + 600 = 800
50 + 80 = 130
6 + 7 = 13
800 + 130 + 13 = 943
This algorithm is related to the traditional "carrying" algorithm, which is also a form of adding by place, except that traditionally we were taught to start with the ones rather than the largest place.

Starting with ones of the numbers, then adding on the other number in parts, often (but not always) starting with the largest place.
256 + 687
256 + 600 = 856
856 + 80 = 936
936 + 7 = 943

Round one or more of the addends to numbers that are easier to work with, then compensate.
256 + 687
256 + 700 = 956
956 – 13 = 943

Transform the entire problem to an equivalent problem that is easier to solve.
256 + 687
256 + 687 = (256 – 13) + (687 + 13)
243 + 700 = 943



Subtraction: *465 – 129*

Subtract one number in parts from the other.
465 – 100 = 365 OR 465 – 125 = 340
365 – 20 = 345 340 – 4 = 336
345 – 5 = 340
340 – 4 = 336

Change one number, then compensate for the change.
465 – 130 = 335 OR 460 – 129 = 331
335 + 1 = 336 331 + 5 = 336

Add up from the number being subtracted.
129 + 1 = 130 OR 129 + 300 = 429
130 + 300 = 430 429 + 1 = 430
430 + 35 = 465 430 + 35 = 465
1 + 300 + 35 = 336 300 + 1 + 35 = 336

Transform the entire problem to an equivalent problem that is easier to solve.
465 – 129 = 466 – 130 (adding 1 to both numbers)
466 – 130 = 336

Subtract each column and record each difference, whether it is positive or negative.
400 – 100 = 300
60 – 20 = 40
5 – 9 = -4
300 + 40 – 4 = 336

Students should be able to break 100 into **90 + 10 and 1000 into **900 + 90 + 10**. This helps them compute to the nearest 100 and 1000 quickly and efficiently knowing the ones should add to 10 and the tens should add to 90. For example 47 to 100 needs a 50 and a 3. Then the child would add on the amount above the hundred. Playing the Close to 100 and Close to 1000 games are key to developing this skill.

Fourth and Fifth Grade Computation Expectations:
Efficient strategies for combinations to 100 and 1000; students should have at least two efficient strategies for solving multi-digit addition and subtraction problems.