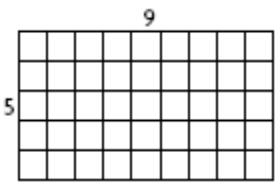
Computation Strategies in Fourth Grade

Children in fourth grade focus on multiplication and division strategies with an emphasis on counting groups, not ones. They build on the work started in third grade with an emphasis on the use of rectangular arrays (a rectangle of unit squares whose dimensions are the factors of a multiplication problem) and the use of clusters of problems they know to solve more difficult problems. Multiplication and division are learned together, although computation work focuses on multiplication facts.

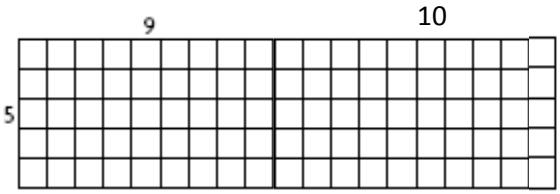
Using Arrays

Fourth graders use rectangular arrays to represent multiplication problems:

5 x 9 = 45



5 x 19 = 95



Cluster Problems

Children solve multiplication problems using landmarks and clusters of problems they know.

10 x 8 = 80	3 x 20 = 60	30 x 21 = 630	32 x 20 = 640
2 x 8 = 16	3 x 4 = 12	2 x 21 = 42	32 x 1 = 32
12 x 8 = 96	3 x 24 = 72	32 x 21 = 672	32 x 21 = 672

Two Kinds of Division

There are two distinct kinds of division problems. Students find the first type of division problem easier to solve. It is called *Sharing*. The second type is called *Partitioning*.

I have 18 balloons for my party. After the party is over, I'm going to divide them evenly between my sister and me. How many balloons will each of us get?

I have 18 balloons for my party. I'm going to tie them together in bunches of 2 to give to my friends. How many bunches can I make?

Breaking apart numbers is an important computational skill for fourth graders. Fourth graders should be fluent breaking apart numbers by place value (469 = 400 + 60 + 9) and using combinations of tens and hundreds (1000 = 900 + 90 + 10) when solving multi-digit addition and subtraction.

Fourth Grade Computation Strategies--continued

Multi-digit Addition Strategies

Adding left to right: 346 + 518

300 + 500 = 800
40 + 10 = 50
6 + 8 = 14
800 + 50 + 14 = 864

Rounding and adjusting: 346 + 518

350 + 510 = 860
860 + 8 = 868
868 – 4 = 864

Breaking apart one number: 346 + 518

346 + 500 = 846
846 + 10 = 856
856 + 8 = 864

Changing both numbers to an equivalent problem that is easier to solve: 346 + 518

346 + 518 = (346 + 4) + (518 – 4)
350 + 514 = 864

Multi-digit Subtraction Strategies

Breaking apart and subtracting: 763 - 239

763 – 200 = 563
563 – 30 = 533
533 – 9 = 524

Rounding and adjusting: 763 - 239

763 – 240 = 523
523 + 1 = 524

Adding Up to subtract: 763 - 239

239 + 1 = 240
240 + 500 = 740
740 + 23 = 763
1 + 500 + 23 = 524

Changing both numbers to an equivalent problem that is easier to solve by adding one to both numbers: 763 - 239

763 - 239 = (763 + 1) - (239 + 1)
764 – 240 = 524

Fourth Grade Computational Fluency

Fourth grade students work on understanding multiplication and division and they develop multi-digit multiplication strategies. By the end of fourth grade, children will recall multiplication facts for 0 x 0 to 12 x 12. They will be developing fluency with a multiplication strategy to solve multi-digit multiplication problems.