

GRADE 4: Add/Subtract Four Digit Numbers With and Without Regrouping

The goal is for students to develop computational fluency, learning a variety of strategies to use to solve problems. Students will look at the numbers involved in the problem and will then decide on a method that best fits the situation. The following are some of the strategies for solving addition/subtraction problems in fourth grade. The majority of these strategies help students develop a strong sense of number and number relationships which are very important life skills.

ADDITION

SUBTRACTION

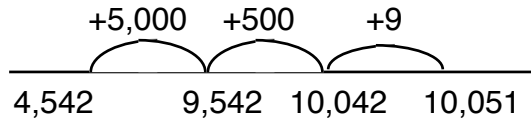
<p>LANDMARK & FRIENDLY #'s:</p> $3,996 + 4,246 =$ <ul style="list-style-type: none">• Move 4 from 4,246 to 3,996. The new problem is now a mental math problem: $4,000 + 4,242 = 8,242$	<p>LANDMARK & FRIENDLY #'s:</p> $6,831 - 4,988 = (+12 \text{ to change } 4,988 \text{ to make } 5,000)$ $6,831 - 5,000 = 1,831$ $1,831 + 12 = 1,843 \text{ (Subtracted 12 too many, add back)}$
<p>COMPENSATION:</p> <ul style="list-style-type: none">• Knowing since $150 + 150 = 300$, $148 + 152 = 300$. (Compensating one number for a change on the other number.)	<p>COUNTING ON (for small differences):</p> $5,968 - 5,964 = 4$ <p>Start at 5,964 and count up to 5,968. Just difference between 8 and 4!</p>
<p>DECOMPOSE (break apart) & COMPOSE (put together):</p> $5,500 + 3,546 =$ $5,500 + 3,000 = 8,500$ $8,500 + 500 = 9,000$ $9,000 + 46 = 9,046$	<p>CONSTANT DIFFERENCE (add/remove same amount from each number):</p> <ul style="list-style-type: none">• $5,641 - 3,339 (+1 \text{ to each}) = 5,642 - 3,340 = 2,302$• $1650 - 1348 = 650 (-1,000 \text{ each})$ $650 - 348 = 350 (-300 \text{ each})$ $350 - 48 = 302 \text{ resulting in a much simpler problem}$

These strategies are developed in the following unit(s) in our curriculum:

- Mathematical Thinking, Landmarks in the Thousands, Money, Miles & Large Numbers.

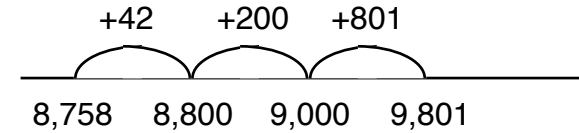
Open Number Line: Modeling "leaps" for adding/subtracting numbers by decomposition.

$$4,542 + 5,509 = 10,051$$



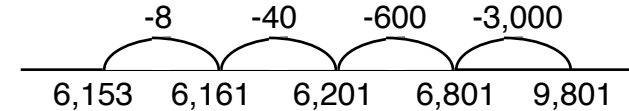
$$9,801 - 8,758 = 1,043$$

* start at 8,758, count up for small differences



$$9,801 - 3,648 =$$

*start at 9,801, count back for large differences



Various algorithms: Calculating sums and differences quickly & accurately.

Addition:

$$\begin{array}{r} 2 \ 21 \\ 5,500 \\ 2,456 \\ 4,389 \\ + 9,871 \\ \hline 22,216 \end{array}$$

Traditional
(Important for adding lists of numbers.)

$$\begin{array}{r} 5 \ 9 \ 9 \ 11 \\ 6,001 \\ - 4,249 \\ \hline 1,752 \end{array}$$

Subtraction:

$$\begin{array}{r} 6,001 \\ - 4,249 \\ \hline 1,752 \end{array}$$

Landmarks (very strong # sense):
 $4,249 + 751 = 5,000$
 $5,000 + 1,001 = 6,001$

$$\begin{array}{r} 6,001 \\ - 4,249 \\ \hline 1,752 \end{array}$$

$2,000 - 200 - 40 - 8 = 1,752$

Negative & # Sense:
 $(6000 - 4000 = 2000)$
 $0 - 200 = -200$
 $0 - 40 = -40$
 $1 - 9 = -8$

Traditional
 ("Borrow 1,000 from 6,000 leaving 5,000. Regroup that 1,000 as 10 100's. "Borrow" one 100 so left with 9 100's. Regroup that 100 as 10 10's. "Borrow" one 10 so left with 9 10's. Regroup that 10 and add to 1 so 11 ones. Subtract each place.)