

Expanded Form

Expanded Form is an excellent lead-in to the Standard Algorithm (the “regular way”), which is formally taught in Grade 4. Expanded form helps students remember that each digit has a value associated with the place it is positioned in a number.

Addition Examples

<p style="text-align: center;">No Regrouping</p> $682 = 600 + 80 + 2$ $\underline{214 = 200 + 10 + 4}$ $898 = 800 + 90 + 8$	<p style="text-align: center;">Regrouping in the Ones Place</p> $428 = 400 + 20 + 8$ $\underline{264 = 200 + 60 + 4}$ $692 = 600 + 80 + 12$
<p style="text-align: center;">Regrouping in the Tens Place</p> $724 = 700 + 20 + 4$ $\underline{181 = 100 + 80 + 1}$ $905 = 800 + 100 + 5$	<p style="text-align: center;">Regrouping Tens and Ones</p> $273 = 200 + 70 + 3$ $\underline{549 = 500 + 40 + 9}$ $822 = 700 + 110 + 12$

Subtraction Examples

<p style="text-align: center;">Regroup Tens & Ones</p> $ \begin{array}{r} 70 \quad 12 \\ 682 = 600 + \cancel{80} + \cancel{2} \\ \underline{264 = 200 + 60 + 4} \\ 418 = 400 + 10 + 8 \end{array} $	<p style="text-align: center;">Regroup Hundreds & Tens</p> $ \begin{array}{r} 300 \quad 120 \\ 428 = \cancel{400} + \cancel{20} + 8 \\ \underline{264 = 200 + 60 + 4} \\ 164 = 100 + 60 + 4 \end{array} $
<p style="text-align: center;">Regroup Hundreds, Tens & Ones</p> $ \begin{array}{r} 110 \\ 600 \quad \cancel{10} \quad 14 \\ 724 = \cancel{700} + \cancel{20} + \cancel{4} \\ \underline{189 = 100 + 80 + 9} \\ 535 = 500 + 30 + 5 \end{array} $	<p style="text-align: center;">Regrouping with Zeros</p> $ \begin{array}{r} 90 \\ 800 \quad \cancel{100} \quad 10 \\ 900 = \cancel{900} + \cancel{0} + \cancel{0} \\ \underline{519 = 500 + 10 + 9} \\ 381 = 300 + 80 + 1 \end{array} $

Base Ten Form

Students can be flexible when adding or subtracting large numbers together. Notice that there is no regrouping necessary, students do not need to remember to “carry” or “borrow.”

Addition Examples for 547 + 248

$500 + 200 = 700$ $40 + 40 = 80$ $7 + 8 = 15$ $700 + 80 + 15 = 795$ * Add each place value, then add all the numbers together.	$547 + 200 = 747$ $747 + 40 = 787$ $787 + 3 = 790$ $790 + 5 = 795$ * Decompose the 8 into 3 + 5 to make a “friendly” number.
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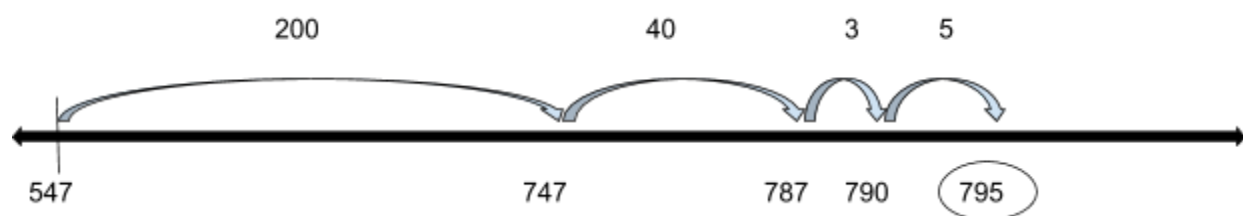
Subtraction Examples for 547 - 248

$547 - 200 = 347$ $347 - 40 = 307$ $307 - 7 = 300$ $300 - 1 = 299$ * Decompose the 8 into 7 + 1 to make a “friendly” number.	$547 - 7 = 540$ $540 - 40 = 500$ $500 - 200 = 300$ $300 - 1 = 299$ * Decompose the 8 into 7 + 1 to make a “friendly” number.
$248 + 2 = 250$ $250 + 50 = 300$ $300 + 200 = 500$ $500 + 47 = 547$ $200 + 50 + 47 + 2 = 299$ * Inverse operations, add to find the difference.	

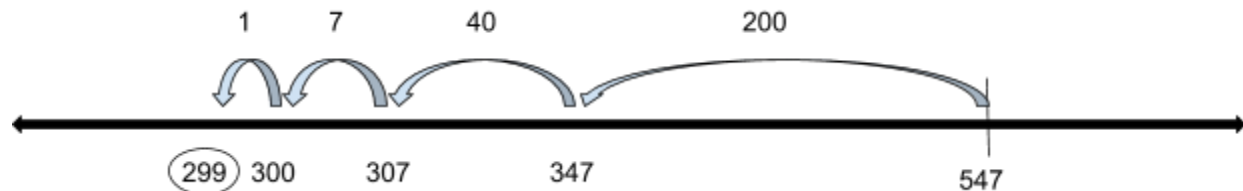
Number Line Addition/Subtraction

Students can be flexible when adding or subtracting numbers on a number line. Notice that there is no regrouping necessary, students do not need to remember to “carry” or “borrow.”

Addition Example for $547 + 248$

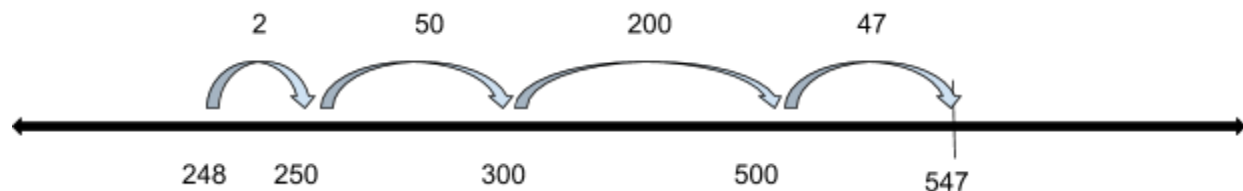


Subtraction Example for $547 - 248$



“Hop” back 248 and land on 299

Subtraction Example for $547 - 248$



“Hop” forward to find the difference: $200 + 50 + 47 + 2 = 299$