Accessible Algorithms for Addition

Introduce the accessible algorithms presented below when students learn about adding with regrouping. Support students’ use of these algorithms whenever they are working on multi-digit addition or decimal addition.

New Groups Below Method
Use with Houghton Mifflin Math, Ch 2, Lessons 3–4; Ch 11, Lesson 2.

This algorithm helps students see the relationships between single-digit addition and the regrouping process that takes place in multi-digit addition. Instead of using the common algorithm of recording the new ten or hundred above the tens or hundreds digits in the equation, students learn to record the new ten or hundred below the tens or hundreds digits.

New Groups Below with Multi-Digit Addition

<table>
<thead>
<tr>
<th>Common Algorithm</th>
<th>New Groups Below Method</th>
</tr>
</thead>
<tbody>
<tr>
<td>1129</td>
<td>129</td>
</tr>
<tr>
<td>+ 97</td>
<td>+ 97</td>
</tr>
<tr>
<td>226</td>
<td>226</td>
</tr>
</tbody>
</table>

With this new algorithm, students can see the 16 resulting from adding 9 ones and 7 ones, and only add the new ten after having added the original tens digits (in the case above, 2 tens and 9 tens).

New Groups Below with Decimal Addition

The New Groups Below Method works equally well to develop understanding of decimal addition.

\[ 4.517 + 2.824 = 7.341 \]
Subtotals Method
Use with Houghton Mifflin Math, Ch 2, Lessons 3–4; Ch 11, Lesson 2.

This algorithm is helpful to students because it allows them to break an addition problem into its components. The algorithm provides students with a tool to solve problems in the direction they read—from left to right.

**Subtotals with Multi-Digit Addition**

\[
\begin{align*}
18,293 \\
+ & \ 2,048 \\
\hline
10,000 \\
10,000 \\
200 \\
130 \\
11 \\
\hline
20,341
\end{align*}
\]

For less-advanced students, an optional transitional method that shows place-value meanings is pictured below. Students can use this method until they are comfortable moving towards the New Groups Below Method or the Subtotals Method.

\[
268 = 200 + 60 + 8 \\
+ 124 = 100 + 20 + 4 \\
392 = 300 + 80 + 12
\]

**Subtotals with Decimal Addition**

The Subtotals Method works equally well to develop understanding of decimal addition.

\[
\begin{align*}
4.517 \\
+ & \ 2.824 \\
\hline
6.000 \\
1.300 \\
0.030 \\
+ & \ 0.011 \\
\hline
7.341
\end{align*}
\]