Addition and Subtraction Within 1,000 with Word Problems to 100
In this module, students build upon all their previous work with place value. They extend their work with addition and subtraction algorithms to numbers up to 1,000. Students continue to use drawings and models to strengthen and deepen their conceptual understanding. They also continue to work with various types of word problems with numbers up to 100.

Strategy Example: In this example of compensation, the subtraction problem 514 - 290 is made much simpler by adding 10 to both numbers before solving:

```
  514
+  10
  524

  290
```

What Came Before this Module: Students worked on fluency in adding and subtracting to 100, and built conceptual understanding for operations on numbers up to 200.

What Comes After this Module: In Module 6, students will be examining the foundations of multiplication and division. They will learn about equal groups, arrays, and the idea that numbers other than 1, 10, and 100 can be units/groups.

Strategy Example: The “Arrow way” of showing 570 - 110. Notice that the solution builds on an easier problem first: 570 - 100. Then students can complete the problem by subtracting 10 more. (See reverse for more on the arrow way)

```
  570
- 100
  470
```

```
  470
-  10
  460
```

New Terms in this Module:
- **Algorithm** - a step-by-step procedure to solve a particular type of problem
- **Compensation** - a simplifying strategy where students add or subtract the same amount to or from both numbers to create an equivalent but easier problem, e.g., 610-290 = 620-300 = 320
- **Compose** - to make 1 larger unit from 10 smaller units
- **Decompose** - to break 1 larger unit into 10 smaller units
- **New groups below** - show newly composed units on the line below the appropriate place in the addition algorithm
- **Simplifying strategy** - e.g., to solve 299 + 6, think 299 + 1 + 5 = 300 + 5 = 305

Familiar Terms:
- **Addend**
- **Addition**
- **Bundle**
- **Difference**
- **Equation**
- **Number bond**
- **Place value**
- **Rename**
- **Subtraction**
- **Tape diagram**
- **Total**
- **Unbundle**
- **Units of ones, tens, hundreds**

Key Common Core Standards:
- Use place value understanding and properties of operations to add and subtract.
  - Add and subtract within 1000, using concrete models or drawings and strategies
  - Mentally add 10 or 100 to a given number 100-900, and mentally subtract 10 or 100 from a given number 100-900
  - Explain why addition and subtraction strategies work, using place value and the properties of operations

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At first glance, arrow notation, or the “arrow way” of doing mathematical operations may seem complicated. However, it is a very helpful method, and is actually very similar to what many of us have naturally learned to do mentally while adding and subtracting.

The arrow way involves chunking a number into more manageable mental pieces in order to add or subtract. Students use numbers that they have become confident working with, such as 100 and 10, in order to simplify the problem. They record their mathematical thinking as an expression with arrows in between the numbers to show the chunks of numbers that they are working with as they go.

The “Arrow Way” is a strategy for both addition and subtraction that is heavily featured in this module.

Sample Problem from Module 5:
The table to the right represents the halftime score at a basketball game.

<table>
<thead>
<tr>
<th>Team</th>
<th>Points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red Team</td>
<td>63</td>
</tr>
<tr>
<td>Yellow Team</td>
<td>71</td>
</tr>
</tbody>
</table>

The red team scored 19 points in the second half.
The yellow team scored 13 points in the second half.
a. Who won the game?
b. By how much did that team win?

This problem gives students many options for solving. They can choose from the strategies they have learned in this module to do the addition and subtraction necessary to solve the problem.