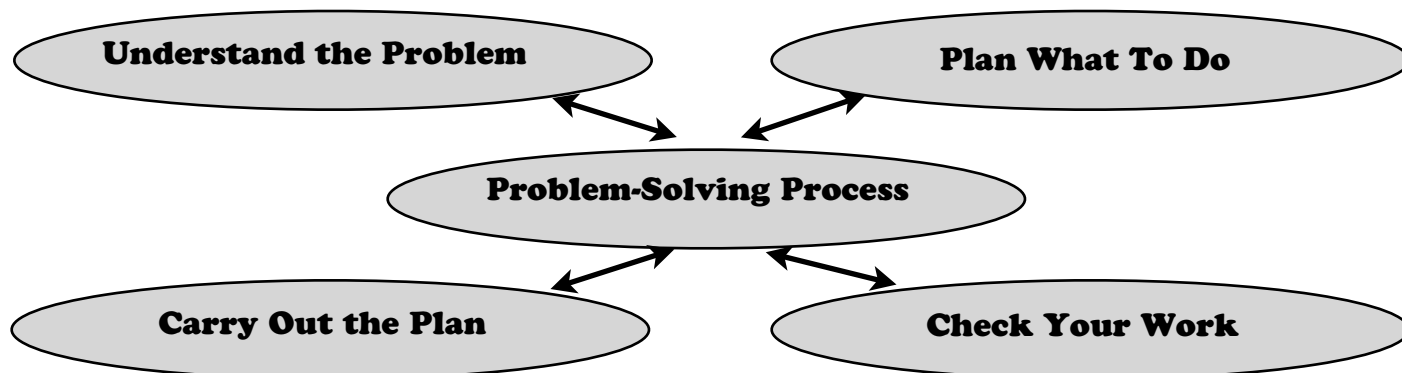


## Trimester 1: Problem-Solving Unit

Our first unit focuses on problem solving. While problem solving will be emphasized throughout the school year, this unit is designed to create a foundation for students that will be built upon in subsequent units. The overarching concept for the unit involves the mathematical practice of students making sense of problems and persevering in solving them using the problem-solving process.

The problem-solving process involves four main steps: understand the problem, plan what to do, carry out the plan, and check your work. While students will generally follow the steps sequentially, the students will be taught that they might need to go back and forth among the steps in order to solve a problem. For example, upon checking one's work, a student might realize that his or her answer is incorrect and make a new plan for solving the problem.



The multistep word problems in this unit will involve whole numbers using the four operations (addition, subtraction, multiplication, and division). Within that context of solving various word problems, students will learn different problem-solving strategies (see table below). It's important to note that each lesson in this unit focuses on one of the strategies listed below so that students have exposure to and experience with each strategy. In later units, students will assume responsibility for selecting the strategy or strategies needed to solve a particular problem, and they will be asked to discuss, explain, and demonstrate solving a problem in multiple ways. As the school year progresses, students will be presented with problems of increasing difficulty.

Strategy	Thinking Skills Needed
<b>Draw a picture, act it out, or make a model</b>	<ul style="list-style-type: none"><li>• Visualize the situation presented in a problem</li><li>• Use models (e.g., using counters, an equation, etc.) to represent problems</li><li>• Analyze models to gain insight into problems</li></ul>
<b>Choose an operation(s)</b>	<ul style="list-style-type: none"><li>• Understand the meaning of operations</li><li>• Build appropriate equations to represent problem situations</li></ul>

<b>Strategy</b>	<b>Thinking Skills Needed</b>
<b>Make a table, diagram, or list</b>	<ul style="list-style-type: none"> <li>•Organize data to more easily identify patterns or relationships</li> <li>•Continue a pattern to find a solution</li> <li>•Identify a starting point and work systematically toward a solution</li> <li>•Create a model (e.g., tape diagram) to organize information and simplify a problem</li> </ul>
<b>Look for a pattern(s)</b>	<ul style="list-style-type: none"> <li>•Recognize the importance of looking for connections between numbers</li> <li>•Identify patterns that lead to solutions</li> </ul>
<b>Use logical reasoning</b>	<ul style="list-style-type: none"> <li>•Organize confusing information to simplify a problem</li> <li>•Make inferences to solve a problem</li> <li>•Draw conclusions based on clues</li> <li>•Identify if/then or cause/effect relationships</li> </ul>
<b>Guess and check</b>	<ul style="list-style-type: none"> <li>•Use “trial and error” thinking</li> <li>•Use number sense and/or estimation to move closer to an answer</li> <li>•Make adjustments during the problem-solving process, based on mathematical reasoning</li> </ul>
<b>Work backwards</b>	<ul style="list-style-type: none"> <li>•Identify information presented in the problem and find missing data, no matter where it might appear in a problem</li> <li>•Use inverse operations to work backward to find solutions</li> </ul>

Adapted from *Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8* (2013) by Susan O’Connell and John SanGiovanni.