

# Grade 1 Lesson-Planning Tool for Mathematical Practice 4

<p><b>Unit:</b> Addition and Subtraction</p> <p><b>Date:</b> January 10</p> <p><b>Lesson:</b> Solve real-world problems using addition and subtraction. (1.OA.1 and 1.MD.4)</p>	
<p><b>Learning objective:</b> As a result of class today, students will be able to represent and solve word problems.</p>	
<p><b>Essential Standard for Mathematical Practice:</b> As a result of class today, students will be able to demonstrate greater proficiency in which Standard for Mathematical Practice?</p> <p><b>Mathematical Practice 4:</b> "Model with mathematics."</p> <ul style="list-style-type: none"> <li>• Students will represent real-world problems.</li> <li>• Students will use their representations to solve real-world problems.</li> <li>• Students will check for the reasonableness of their answers.</li> </ul>	
<p><b>Formative assessment process:</b> How will students be expected to demonstrate mastery of the learning objective during in-class checks for understanding teacher feedback, and student action on that feedback?</p> <ul style="list-style-type: none"> <li>• Students will share different ways to find a missing addend, and teacher will make connections between the strategies.</li> <li>• Students will create questions that can be solved using mathematics in task 1 and share them with the class. Have students critique the reasoning of others.</li> <li>• Students will work in pairs to complete the bar graph in task 3, generate questions, and solve a question. The teacher will monitor progress and ask assessing and advancing questions as needed.</li> </ul>	
<p><b>Probing Questions for Differentiation on Mathematical Tasks</b></p>	
<p><b>Assessing Questions</b> (Create questions to scaffold instruction for students who are stuck during the lesson or the lesson tasks.)</p> <ul style="list-style-type: none"> <li>• What do you know?</li> <li>• What do you need to know?</li> <li>• How will you show your thinking?</li> <li>• Can you show me a model using Unifix cubes (or other objects)?</li> <li>• How can you use a number line to show your thinking?</li> </ul>	<p><b>Advancing Questions</b> (Create questions to further learning for students who are ready to advance beyond the learning standard.)</p> <ul style="list-style-type: none"> <li>• Write another question that can be solved using the data in the bar graph in task 3.</li> <li>• How many more students chose apples and grapes together than chose oranges?</li> </ul> <p>If the number of students who chose each type of fruit is doubled, which type of fruit would be chosen the most? Explain your thinking.</p>

<b>Tasks</b> (Tasks can vary from lesson to lesson.)	<b>What Will the Teacher Be Doing?</b> (How will the teacher present and then monitor student response to the task?)	<b>What Will Students Be Doing?</b> (How will students be actively engaged in each part of the lesson?)
<p><b>Beginning-of-Class Routines</b></p> <p>How does the warm-up activity connect to students' prior knowledge, or how is it based on analysis of homework?</p>	<p>Bring students in a circle and ask: What is the value of the box in <math>5 + \square = 11</math>? How did you find the answer?</p> <p>Tell your elbow partner your answer and how you solved the problem.</p> <p>Collect answers and strategies. Show the strategies on the board for all students to understand.</p> <p>Ask: Which strategy makes the most sense to you? Which one are you most likely to use? Why?</p>	<p>Students think independently about how to find the answer and explain how to find the answer.</p> <p>Students share their answer and strategy with an elbow partner.</p> <p>Students share their answers and strategies to the whole group.</p> <p>Students raise their hand or stand to show which strategy they would use. Selected students verbally share their answers.</p>
<p><b>Task 1</b></p> <p>How will students be engaged in understanding the learning objective? (See figure 4.10.)</p>	<p>Teacher shows a picture of a group of various kinds of pets and asks, "What questions can you ask about the picture?"</p> <p>Teacher asks for students to share their questions and sorts them as (1) questions that can be solved using mathematics and (2) questions that cannot be solved using mathematics.</p> <p>Teacher chooses one of the mathematical questions for student pairs to solve.</p>	<p>Students work with partners to write at least two questions related to the picture.</p> <p>Students share questions and help sort the questions. They talk about what they need to answer each question.</p> <p>For example:</p> <ul style="list-style-type: none"> <li>• How many dogs are there? (Students will need to know how many dogs are in the picture.)</li> <li>• How many more fish than birds are there? (Students will need to know how many fish there are and how many birds there are in the picture.)</li> </ul> <p>Students solve the question and share the way they represented the problem and solved it.</p>

<p><b>Task 2</b></p> <p>How will the task develop student sense making and reasoning?</p>	<p>Teacher asks students to determine if they like apples, grapes, or oranges the best. They must choose one. Select one student from each category to count the number of students in his or her category.</p> <p>On the board are three pictures: (1) an apple, (2) grapes, and (3) an orange. Students line up in front of the picture showing their favorite of the three fruits.</p> <p>Teacher asks students to look at their student bar graph. Then, the teacher asks:</p> <ul style="list-style-type: none"> <li>• “Which fruit did most students choose? How do you know?”</li> <li>• “Which fruit did the fewest number of students choose? How do you know?”</li> </ul>	<p>Students choose apple, grapes, or orange.</p> <p>Students line up in front of the fruit they chose. The teacher decides if they stay standing or sit in their line.</p> <p>The selected students count the number of students in their line of students and record the number on the board under the picture.</p> <p>Students work with an elbow partner in their line to answer these questions.</p> <p>Students share their answers verbally when selected by the teacher. A second student responds with “I agree because . . .” or “I disagree because . . .”</p>
<p><b>Task 3</b></p> <p>How will the task require student conjectures and communication? (See figure 4.11.)</p>	<p>Teacher has students complete a bar graph showing the data from task 2.</p> <p>Teacher asks student pairs to create a question that can be answered using the data in the bar graph. Look for questions that require addition or subtraction in order to be answered.</p> <p>Teacher decides if each pair can choose a question to answer and show work when answering it or if the entire class should answer the same question. If students finish early, they can answer another question or create a new question and answer it.</p> <p>Select students to share their work with the class who solved different problems or who solved the same problem using different strategies.</p>	<p>Students complete the bar graph in task 3 with a partner using the data on the board.</p> <p>Students create questions that can be answered using the data in their bar graph.</p> <p>Students share questions, and the teacher writes them on the board or anchor chart paper.</p> <p>Students write the question they are going to solve and work in pairs to show their reasoning used to solve the question.</p> <p>Students explain how they know their answer is reasonable.</p> <p>Students share their work with the class.</p>

<p><b>Closure</b></p> <p>How will student questions and reflections be elicited in the summary of the lesson?</p> <p>How will students' understanding of the learning objective be determined?</p>	<p>Teacher poses the following questions:</p> <ul style="list-style-type: none"> <li>• How did you know whether or not your question could be solved using mathematics?</li> <li>• Which strategies shown were easy for you to understand?</li> <li>• Which strategies were most efficient?</li> <li>• Which strategies were most effective?</li> <li>• How did the bar graph help you answer the questions about fruit students chose?</li> </ul>	<p>Students answer their questions in a journal or as a pair-share and articulate what they learned during the lesson.</p> <p>Students tell an elbow partner what they learned today related to representing and solving word problems.</p>
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*Source: Template adapted from Kanold, 2012c. Used with permission.*

**References**

Kanold, T. D. (Ed.). (2012c). *Common Core mathematics in a PLC at Work, leader's guide*. Bloomington, IN: Solution Tree Press.