



## 2.4 Mathematical Practices by Design

Instructions: Highlight the Mathematical Practices and/or Look Fors that will be prominent in the lesson. Write design plans for how the *selected* Mathematical Practice will be developed.

Topic/Goal of Lesson: \_\_\_\_\_

<b>Mathematical Practices and Student Look Fors</b>	<b>Design Plans</b>
<p>1. Make sense of problems and persevere in solving them.</p> <ul style="list-style-type: none"><li>Analyze information (givens, constraints, relationships, goals).</li><li>Make conjectures and plan a solution pathway.</li><li>Use objects, drawings, and diagrams to solve problems.</li><li>Monitor progress and change course as necessary.</li><li>Check answers to problems and ask, "Does this make sense?"</li></ul>	
<p>2. Reason abstractly and quantitatively.</p> <ul style="list-style-type: none"><li>Make sense of quantities and relationships in problem situations.</li><li>Create a coherent representation of a problem.</li><li>Translate from contextualized to generalized or vice versa.</li><li>Flexibly use properties of operations.</li></ul>	
<p>3. Construct viable arguments and critique the reasoning of others.</p> <ul style="list-style-type: none"><li>Make conjectures and use counterexamples to build a logical progression of statements to support ideas.</li><li>Use definitions and previously established results.</li><li>Listen to or read the arguments of others.</li><li>Ask probing questions to other students.</li></ul>	
<p>4. Model with mathematics.</p> <ul style="list-style-type: none"><li>Determine equation that represents a situation.</li><li>Illustrate mathematical relationships using diagrams, two-way tables, graphs, flowcharts, and formulas.</li><li>Check to see whether an answer makes sense within the context of a situation and change a model when necessary.</li></ul>	

<b>Mathematical Practices and Student Look Fors</b>	<b>Design Plans</b>
<p>5. Use appropriate tools strategically.</p> <ul style="list-style-type: none"> <li>• Choose tools that are appropriate for the task (e.g., manipulative, calculator, digital technology, ruler).</li> <li>• Use technological tools to visualize the results of assumptions, explore consequences, and compare predictions with data.</li> <li>• Identify relevant external math resources (digital content on a website) and use them to pose or solve problems.</li> </ul>	
<p>6. Attend to precision.</p> <ul style="list-style-type: none"> <li>• Communicate precisely, using appropriate terminology.</li> <li>• Specify units of measure and provide accurate labels on graphs.</li> <li>• Express numerical answers with appropriate degree of precision.</li> <li>• Provide carefully formulated explanations.</li> </ul>	
<p>7. Look for and make use of structure.</p> <ul style="list-style-type: none"> <li>• Notice patterns or structure, recognizing that quantities can be represented in different ways.</li> <li>• Use knowledge of properties to efficiently solve problems.</li> <li>• View complicated quantities both as single objects and as compositions of several objects.</li> </ul>	
<p>8. Look for and express regularity in repeated reasoning.</p> <ul style="list-style-type: none"> <li>• Notice repeated calculations and look for general methods and shortcuts.</li> <li>• Maintain oversight of the process while attending to the details.</li> <li>• Evaluate reasonableness of intermediate and final results.</li> </ul>	

Source: Adapted from Elementary Mathematics Specialists & Teacher Leaders Project. (n.d.). Common Core Look-Fors. Unpublished document. Used with permission. Previously published by Bay-Williams, J., McGatha, M., Kobett, B., and Wray, J. (2014). *Mathematics Coaching: Resources and Tools for Coaches and Leaders, K-12*. New York, NY: Pearson Education, Inc.