<table>
<thead>
<tr>
<th>Standards for Mathematical Practice Look Forses</th>
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<tbody>
<tr>
<td><strong>Student Behaviors</strong></td>
</tr>
<tr>
<td>1. Make sense of problems and persevere in solving them.</td>
</tr>
<tr>
<td><strong>Students are:</strong></td>
</tr>
<tr>
<td>• Working and reading rich problems carefully (TKES 3)</td>
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<tr>
<td>• Drawing pictures, diagrams, tables, or using objects to make sense of the problem (TKES 3)</td>
</tr>
<tr>
<td>• Discussing the meaning of the problem with classmates (TKES 4)</td>
</tr>
<tr>
<td>• Making choices about which solution path to take (TKES 5)</td>
</tr>
<tr>
<td>• Trying out potential solution paths and making changes as needed (TKES 8)</td>
</tr>
<tr>
<td>• Checking answers and making sure solutions are reasonable and make sense (TKES 6)</td>
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<tr>
<td>• Exploring other ways to solve the problem (TKES 8)</td>
</tr>
<tr>
<td>• Persisting in efforts to solve challenging problems, even after reaching a point of frustration. (TKES 8)</td>
</tr>
<tr>
<td>2. Reason abstractly and quantitatively.</td>
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<tr>
<td><strong>Students are:</strong></td>
</tr>
<tr>
<td>• Using mathematical symbols to represent situations (TKES 3)</td>
</tr>
<tr>
<td>• Taking quantities out of context to work with them (decontextualizing) (TKES 3)</td>
</tr>
<tr>
<td>• Putting quantities back in context to see if they make sense (contextualizing) (TKES 3)</td>
</tr>
<tr>
<td>• Considering units when determining if the answer makes sense in terms of the situation (TKES 3)</td>
</tr>
<tr>
<td>3. Construct viable arguments and critique the reasoning of others.</td>
</tr>
<tr>
<td><strong>Students are:</strong></td>
</tr>
<tr>
<td>• Making and testing conjectures (TKES 8)</td>
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<tr>
<td>• Explaining and justifying their thinking using words, objects, and drawings (TKES 6)</td>
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<tr>
<td>• Listening to the ideas of others and deciding if they make sense (TKES 4)</td>
</tr>
<tr>
<td>• Asking useful questions (TKES 3)</td>
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<tr>
<td>• Identifying flaws in logic when responding to the arguments of others (TKES 4)</td>
</tr>
<tr>
<td>• Elaborating with a second sentence (spontaneously or prompted by the teacher or another student) to explain their thinking and connect it to their first sentence. (TKES 8)</td>
</tr>
<tr>
<td>• Talking about and asking questions about each other’s thinking, in order to clarify or improve their own mathematical understanding. (TKES 4)</td>
</tr>
<tr>
<td>• Revising their work based upon the justification and explanations of others. (TKES 8)</td>
</tr>
<tr>
<td>4. Model with mathematics.</td>
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<tr>
<td><strong>Students are:</strong></td>
</tr>
<tr>
<td>• Using mathematical models (i.e. formulas, equations, symbols) to solve problems in the world (TKES 3)</td>
</tr>
<tr>
<td>• Using appropriate tools such as objects, drawings, and tables to create mathematical models (TKES 3)</td>
</tr>
<tr>
<td>• Making connections between different mathematical representations (concrete, verbal, algebraic, numerical, graphical, pictorial, etc.) (TKES 8)</td>
</tr>
<tr>
<td>• Checking to see if an answer makes sense within the context of a situation and changing the model as needed (TKES 8)</td>
</tr>
<tr>
<td>5. Use appropriate tools strategically.</td>
</tr>
<tr>
<td><strong>Students are:</strong></td>
</tr>
<tr>
<td>• Using technological tools to explore and deepen understanding of concepts (TKES 3)</td>
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<tr>
<td>• Deciding which tool will best help solve the problem. Examples may include: (TKES 3)</td>
</tr>
<tr>
<td>• Calculator</td>
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<tr>
<td>• Concrete models</td>
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<tr>
<td>• Digital Technology</td>
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<tr>
<td>• Pencil/paper</td>
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<tr>
<td>• Ruler, compass, protractor</td>
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<tr>
<td>• Estimating solutions before using a tool (TKES 3)</td>
</tr>
<tr>
<td>• Comparing estimates to solutions to see if the tool was effective (TKES 3)</td>
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<tr>
<td>6. Attend to precision.</td>
</tr>
<tr>
<td><strong>Students are:</strong></td>
</tr>
<tr>
<td>• Communicating precisely using clear language and accurate mathematics vocabulary (TKES 1)</td>
</tr>
<tr>
<td>• Deciding when to estimate or give an exact answer (TKES 1)</td>
</tr>
<tr>
<td>• Calculating accurately and efficiently, expressing answers with an appropriate degree of precision (TKES 1)</td>
</tr>
<tr>
<td>• Using appropriate units; appropriately labeling diagrams and graphs (TKES 1)</td>
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<tr>
<td>7. Look for and make use of structure.</td>
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<tr>
<td><strong>Students are:</strong></td>
</tr>
<tr>
<td>• Finding structure and patterns in numbers (TKES 1)</td>
</tr>
<tr>
<td>• Finding structure and patterns in diagrams and graphs (TKES 1)</td>
</tr>
<tr>
<td>• Using patterns to make rules about math (TKES 1)</td>
</tr>
<tr>
<td>• Using these math rules to help them solve problems (TKES 1)</td>
</tr>
<tr>
<td>8. Look for and express regularity in repeated reasoning.</td>
</tr>
<tr>
<td><strong>Students are:</strong></td>
</tr>
<tr>
<td>• Looking for patterns when working with numbers, diagrams, tables, and graphs (TKES 1)</td>
</tr>
<tr>
<td>• Observing when calculations are repeated (TKES 8)</td>
</tr>
<tr>
<td>• Using observations from repeated calculations to take shortcuts(TKES 8)</td>
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</tbody>
</table>

*Please note that most of the teacher and student behaviors listed can be paired with more than one TKES indicator.*
<table>
<thead>
<tr>
<th>Standards for Mathematical Practice Teacher Behaviors</th>
</tr>
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<tbody>
<tr>
<td><strong>1. Make sense of problems and persevere in solving them.</strong></td>
</tr>
<tr>
<td><em>Teachers are:</em></td>
</tr>
<tr>
<td>• Providing rich problems aligned to the standards (TKES 1)</td>
</tr>
<tr>
<td>• Providing appropriate time for students to engage in the productive struggle of problem solving (TKES 8)</td>
</tr>
<tr>
<td><em>Teachers ask:</em></td>
</tr>
<tr>
<td>• What information do you have? What do you need to find out? What do you think the answer might be?</td>
</tr>
<tr>
<td>• Can you draw a picture? How could you make this problem easier to solve?</td>
</tr>
<tr>
<td>• How is ____’s way of solving the problem like/different from yours? Does your plan make sense? Why or why not?</td>
</tr>
<tr>
<td>• What tools/manipulatives might help you? What are you having trouble with? How can you check this?</td>
</tr>
<tr>
<td><strong>2. Reason abstractly and quantitatively.</strong></td>
</tr>
<tr>
<td><em>Teachers are:</em></td>
</tr>
<tr>
<td>• Providing a variety of problems in different contexts that allow students to arrive at a solution in different ways (TKES 4)</td>
</tr>
<tr>
<td>• Using think aloud strategies as they model problem solving (TKES 3)</td>
</tr>
<tr>
<td>• Attentively listening for strategies students are using to solve problems (TKES 5)</td>
</tr>
<tr>
<td><em>Teachers ask:</em></td>
</tr>
<tr>
<td>• What does the number ____ represent in the problem? How can you represent the problem with symbols and numbers?</td>
</tr>
<tr>
<td>• Can you make a chart, table or graph?</td>
</tr>
<tr>
<td><strong>3. Construct viable arguments and critique the reasoning of others.</strong></td>
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<tr>
<td><em>Teachers are:</em></td>
</tr>
<tr>
<td>• Posing tasks that require students to explain, argue, or critique (TKES 8)</td>
</tr>
<tr>
<td>• Providing many opportunities for student discourse in pairs, groups, and during whole group instruction (TKES 4)</td>
</tr>
<tr>
<td><em>Teachers ask:</em></td>
</tr>
<tr>
<td>• Why or why not? How do you know? Can you explain that? Do you agree?</td>
</tr>
<tr>
<td>• How is your answer different than ____’s? What math language will help you prove your answer?</td>
</tr>
<tr>
<td>• What examples could prove or disprove your argument? What questions do you have for ____?</td>
</tr>
<tr>
<td><strong>4. Model with mathematics.</strong></td>
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<tr>
<td><em>Teachers are:</em></td>
</tr>
<tr>
<td>• Providing opportunities for students to solve problems in real life contexts (TKES 3)</td>
</tr>
<tr>
<td>• Identifying problem solving contexts connected to student interests (TKES 4)</td>
</tr>
<tr>
<td><em>Teachers ask:</em></td>
</tr>
<tr>
<td>• Can you write a number sentence to describe this situation? What do you already know about solving this problem?</td>
</tr>
<tr>
<td>• What connections do you see? Why do the results make sense? Is this working or do you need to change your model?</td>
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<tr>
<td><strong>5. Use appropriate tools strategically.</strong></td>
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<tr>
<td><em>Teachers are:</em></td>
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<tr>
<td>• Making a variety of tools readily accessible to students and allowing them to select appropriate tools for themselves (TKES 3)</td>
</tr>
<tr>
<td>• Helping students understand the benefits and limitations of a variety of math tools (TKES 8)</td>
</tr>
<tr>
<td><em>Teachers ask:</em></td>
</tr>
<tr>
<td>• How could you use manipulatives or a drawing to show your thinking?</td>
</tr>
<tr>
<td>• Which tool/manipulative would be best for this problem? What other resources could help you solve this problem?</td>
</tr>
<tr>
<td><strong>6. Attend to precision.</strong></td>
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<tr>
<td><em>Teachers are:</em></td>
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<tr>
<td>• Explicitly teaching mathematics vocabulary (TKES 1)</td>
</tr>
<tr>
<td>• Insisting on accurate use of academic language from students (TKES 8)</td>
</tr>
<tr>
<td>• Modeling precise communication (TKES 10)</td>
</tr>
<tr>
<td>• Requiring students to answer problems with complete sentences, including units (TKES 10)</td>
</tr>
<tr>
<td>• Providing opportunities for students to check the accuracy of their work (TKES 5)</td>
</tr>
<tr>
<td><em>Teachers ask:</em></td>
</tr>
<tr>
<td>• What does the word ____ mean? Explain what you did to solve the problem.</td>
</tr>
<tr>
<td>• Compare your answer to ____’s answer. What labels could you use?</td>
</tr>
<tr>
<td>• How do you know your answer is accurate? Did you use the most efficient way to solve the problem?</td>
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<td><strong>7. Look for and make use of structure.</strong></td>
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<tr>
<td><em>Teachers are:</em></td>
</tr>
<tr>
<td>• Providing sense making experiences for all students (TKES 2)</td>
</tr>
<tr>
<td>• Allowing students to do the work of using structure to find the patterns for themselves rather than doing this work for students (TKES 8)</td>
</tr>
<tr>
<td><em>Teachers ask:</em></td>
</tr>
<tr>
<td>• Why does this happen? How is ____ related to ____? Why is this important to the problem?</td>
</tr>
<tr>
<td>• What do you know about ____ that you can apply to this situation? How can you use what you know to explain why this works?</td>
</tr>
<tr>
<td>• What patterns do you see?</td>
</tr>
<tr>
<td><strong>8. Look for and express regularity in repeated reasoning.</strong></td>
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<td><em>Teachers are:</em></td>
</tr>
<tr>
<td>• Providing sense making experiences for all students (TKES 2)</td>
</tr>
<tr>
<td>• Allowing students to do the work of finding and using their own shortcuts rather than doing this work for students (TKES 8)</td>
</tr>
<tr>
<td><em>Teachers ask:</em></td>
</tr>
<tr>
<td>• What generalizations can you make? Can you find a shortcut to solve the problem?</td>
</tr>
<tr>
<td>• How would your shortcut make the problem easier? How could this problem help you solve another problem?</td>
</tr>
</tbody>
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