

## Professional Learning Schedule - Transitioning to the CCSS and Deepening Understanding of Mathematics in Grades 2-4

Month/Agenda	Time Needed	Learning Goals/Next Steps	Resources
<p><b>September - CCSSM Content Knowledge and Overview of PLC Work</b></p> <ul style="list-style-type: none"> <li>• Overview and norms for PLCs</li> <li>• Schedule for this year's PLC</li> <li>• Research and recommendations for implementation of CCSSM</li> <li>• Unpacking the CCSSM by grade</li> <li>• Overview of Standards of Mathematical Practice</li> <li>• Setting norms and goals for lesson study</li> </ul>	<p>1 day (6 hours)</p>	<ul style="list-style-type: none"> <li>• In grade level teams, teachers will spend time “unpacking” their grade level CCSSM. They will pay special attention to standards that are treated differently than previous Michigan GLCEs, ones that are new to their grade level, and those that are foundational to what comes in later grades (Hanover Research, 2012). Grade 2 will pay special attention to the domains, Counting and Cardinality and Number and Operation in Base Ten. Grades 3 and 4 will pay close attention to the domain, Number and Operations – Fractions. All grades will also focus on the domain, Operations and Algebraic Thinking.</li> <li>• Teachers will preview the Standards for Mathematical Practice and discuss the following guided questions (O'Connell and SanGiovanni, 2013):               <ul style="list-style-type: none"> <li>○ “What is the role of the Standards for Mathematical Practice in the CCSS?”</li> <li>○ How do these Practices relate to content standards?</li> <li>○ Can these Practices be taught in isolation?</li> <li>○ Why is it important for teachers to better understand these standards?</li> <li>○ How will the understanding of these Practices impact math proficiency for your students?</li> <li>○ How will the understanding of these Practices impact our math instruction?”</li> </ul> </li> <li>• Teachers will set goals and norms for “lesson study” observations and discuss data to collect (i.e. recorded student conversations, student learning samples, etc. and assessments to be obtained).</li> </ul>	<ul style="list-style-type: none"> <li>• Copies of the CCSSM for each grade level team member</li> <li>• Michigan Crosswalk documents for each grade level</li> <li>• Copies of the Standards of Mathematical Practice</li> <li>• <i>Common Core Mathematics in a PLC at Work: Grades 3-5 and Grades K-2</i> (for each PLC member)</li> <li>• <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>• Guest teacher coverage for 9 teachers (3 per grade) for an entire day</li> </ul>

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		<p><b>Next Steps for Teachers:</b> Read <a href="#">Chapter 2, Exploring Standard 1: Make Sense of Problems and Persevere in Solving Them</a> from <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i></p>	
<p><b>October - Make Sense of Problems and Persevere in Solving Them</b></p> <ul style="list-style-type: none"> <li>Experiencing the practice standard</li> <li>Lesson planning - including the practice standard</li> </ul>	<p>1 day (3 hours), Follow up - lesson study observations (3 hours-1 hour per teacher in grade level teams of 3)</p>	<ul style="list-style-type: none"> <li>Teachers will build content knowledge and pedagogical knowledge on the practice standard. Essential questions include: <ul style="list-style-type: none"> <li>What is the problem asking?</li> <li>How should I begin?</li> <li>Where is the necessary data?</li> <li>What should I do with that data?</li> <li>Did my plan work?</li> <li>Does my answer make sense?</li> <li>Do I need to go back and try a different strategy?</li> </ul> </li> <li>Teachers will have the opportunity to experience the practice standard, "make sense of problems and persevere in solving them" as a learner.</li> <li>Teachers will work in grade level teams to create a shared lesson that embodies techniques to support the development of <b>problem-solving skills</b>. This lesson will be taught by all grade level teachers and observed by at least one colleague before the next meeting.</li> </ul> <p><b>Next Steps for Teachers:</b> Teach the shared lesson. Observe a colleague teach the observed lesson. Prepare a reflection on the students' use of the practice standard and revisions necessary to meet the content and practice standards. Read <a href="#">Chapter 3, Exploring Standard 2: Reason Abstractly and Quantitatively</a> from <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i></p>	<ul style="list-style-type: none"> <li><i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>Guest teacher coverage for 9 teachers (3 per grade) for a half day, then guest teacher coverage for another half day for 3 grades</li> </ul>

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<p><b>November - Reason Abstractly and Quantitatively</b></p> <ul style="list-style-type: none"> <li>• Reflection and debrief of lesson observation</li> <li>• Experiencing the practice standard</li> <li>• Lesson planning - including the practice standard</li> </ul>	<p>1 day (3 hours), Follow up - lesson study observations (3 hours-1 hour per teacher in grade level teams of 3)</p>	<ul style="list-style-type: none"> <li>• Teachers will work in grade level teams to debrief observations of shared lesson and make revisions for future lessons on problem solving.</li> <li>• Teachers will build content knowledge and pedagogical knowledge on the practice standard. Essential questions include:             <ul style="list-style-type: none"> <li>○ How can I represent quantities in a variety of ways?</li> <li>○ How can I remove the problem context to solve the problem in an abstract way (equations, variables, and expressions)?</li> <li>○ Do I need to refer back to the problem context to understand and evaluate the answer?</li> </ul> </li> <li>• Teachers will have the opportunity to experience the practice standard, "reason abstractly and quantitatively" as a learner.</li> <li>• Teachers will work in grade level teams to create a shared lesson that embodies techniques to support the development of the ability to reason abstractly and quantitatively. This lesson will be taught by all grade level teachers and observed by at least one colleague before the next meeting.</li> </ul> <p><b>Next Steps for Teachers:</b> Teach the shared lesson. Observe a colleague teach the observed lesson. Prepare a reflection on the students' use of the practice standard and revisions necessary to meet the content and practice standards. Read Chapter 4, Exploring Standard 3: Construct Viable Arguments and Critique the Reasoning of Others from <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i>.</p>	<ul style="list-style-type: none"> <li>• <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>• Guest teacher coverage for 9 teachers (3 per grade) for a half day, then guest teacher coverage for another half day for 3 grades</li> </ul>
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<p><b>December - Construct Viable Arguments and Critique the Reasoning of Others</b></p> <ul style="list-style-type: none"> <li>• Reflection and debrief of lesson observation</li> <li>• Experiencing the practice standard</li> <li>• Lesson planning - including the practice standard</li> </ul>	<p>1 day (3 hours), Follow up - lesson study observations (3 hours-1 hour per teacher in grade level teams of 3)</p>	<ul style="list-style-type: none"> <li>• Teachers will work in grade level teams to debrief observations of shared lesson and make revisions for future lessons on <b>reasoning abstractly and quantitatively</b>.</li> <li>• Teachers will build content knowledge and pedagogical knowledge on the practice standard. Essential questions include:             <ul style="list-style-type: none"> <li>○ How can I construct viable arguments, both orally and in writing?</li> <li>○ What must I do in order to listen to and critique the reasoning of others?</li> </ul> </li> <li>• Teachers will have the opportunity to experience the practice standard, “<b>construct viable arguments and critique the reasoning of others</b>” as a learner.</li> <li>• Teachers will work in grade level teams to create a shared lesson that embodies techniques to support the development of the ability to <b>construct viable arguments and critique the reasoning of others</b>. This lesson will be taught by all grade level teachers and observed by at least one colleague before the next meeting.</li> </ul> <p><b>Next Steps for Teachers:</b> Teach the shared lesson. Observe a colleague teach the observed lesson. Prepare a reflection on the students’ use of the practice standard and revisions necessary to meet the content and practice standards. Read <b>Chapter 5, Exploring Standard 4: Model with Mathematics</b> from <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i>.</p>	<ul style="list-style-type: none"> <li>• <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>• Guest teacher coverage for 9 teachers (3 per grade) for a half day, then guest teacher coverage for another half day for 3 grades</li> </ul>
<p><b>January - Model with Mathematics</b></p> <ul style="list-style-type: none"> <li>• Reflection and</li> </ul>	<p>1 day (3 hours), Follow up</p>	<ul style="list-style-type: none"> <li>• Teachers will work in grade level teams to debrief observations of shared lesson and make revisions for future lessons on <b>constructing arguments and critiquing the</b></li> </ul>	<ul style="list-style-type: none"> <li>• <i>Putting the Practices Into Action: Implementing the Common Core Standards for</i></li> </ul>

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<p>debrief of lesson observation</p> <ul style="list-style-type: none"> <li>Experiencing the practice standard</li> <li>Lesson planning - including the practice standard</li> </ul>	<p>- lesson study observations (3 hours-1 hour per teacher in grade level teams of 3)</p>	<p><b>reasoning of others.</b></p> <ul style="list-style-type: none"> <li>Teachers will build content knowledge and pedagogical knowledge on the practice standard. Essential questions include: <ul style="list-style-type: none"> <li>How can I model math ideas and problems in varied ways?</li> <li>How can I analyze models to draw conclusions and solve problems?</li> </ul> </li> <li>Teachers will have the opportunity to experience the practice standard, "model with mathematics" as a learner.</li> <li>Teachers will work in grade level teams to create a shared lesson that embodies techniques to support the development of the ability to model with mathematics. This lesson will be taught by all grade level teachers and observed by at least one colleague before the next meeting.</li> </ul> <p><b>Next Steps for Teachers:</b> Teach the shared lesson. Observe a colleague teach the observed lesson. Prepare a reflection on the students' use of the practice standard and revisions necessary to meet the content and practice standards. Read <a href="#">Chapter 6, Exploring Standard 5: Use Appropriate Tools Strategically</a> from <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i>.</p>	<p><i>Mathematical Practice, K-8</i> (for each PLC member)</p> <ul style="list-style-type: none"> <li>Guest teacher coverage for 9 teachers (3 per grade) for a half day, then guest teacher coverage for another half day for 3 grades</li> </ul>
<p><b>February - Use appropriate tools strategically</b></p> <ul style="list-style-type: none"> <li>Reflection and debrief of lesson observation</li> </ul>	<p>1 day (3 hours), Follow up - lesson study observations (3</p>	<ul style="list-style-type: none"> <li>Teachers will work in grade level teams to debrief observations of shared lesson and make revisions for future lessons on modeling in mathematics.</li> <li>Teachers will build content knowledge and pedagogical knowledge on the practice standard. Essential questions include: <ul style="list-style-type: none"> <li>When do I use tools to aid in mathematics and how</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li><i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>Guest teacher coverage for 9 teachers (3 per grade) for a half</li> </ul>

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<ul style="list-style-type: none"> <li>Experiencing the practice standard</li> <li>Lesson planning - including the practice standard</li> </ul>	<p>hours-1 hour per teacher in grade level teams of 3)</p>	<p style="text-align: center;">do I select appropriate tools?  <ul style="list-style-type: none"> <li>How can I use tools appropriately and accurately?</li> </ul> </p> <ul style="list-style-type: none"> <li>Teachers will have the opportunity to experience the practice standard, "use tools strategically" as a learner.</li> <li>Teachers will work in grade level teams to create a shared lesson that embodies techniques to support the development of the ability to use tools strategically. This lesson will be taught by all grade level teachers and observed by at least one colleague before the next meeting.</li> </ul> <p><b>Next Steps for Teachers:</b> Teach the shared lesson. Observe a colleague teach the observed lesson. Prepare a reflection on the students' use of the practice standard and revisions necessary to meet the content and practice standards. Read <a href="#">Chapter 7, Exploring Standard 6: Attend to Precision</a> from <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i>.</p>	<p>day, then guest teacher coverage for another half day for 3 grades</p>
<p><b>March - Attend to precision</b></p> <ul style="list-style-type: none"> <li>Reflection and debrief of lesson observation</li> <li>Experiencing the practice standard</li> <li>Lesson planning - including the practice standard</li> </ul>	<p>1 day (3 hours), Follow up - lesson study observations (3 hours-1 hour per teacher in grade level teams of</p>	<ul style="list-style-type: none"> <li>Teachers will work in grade level teams to debrief observations of shared lesson and make revisions for future lessons on using appropriate tools strategically.</li> <li>Teachers will build content knowledge and pedagogical knowledge on the practice standard. Essential questions include: <ul style="list-style-type: none"> <li>How do I calculate accurately and perform math tasks with precision?</li> <li>How do I communicate precisely?</li> </ul> </li> <li>Teachers will have the opportunity to experience the practice standard, "attend to precision" as a learner.</li> <li>Teachers will work in grade level teams to create a shared lesson that embodies techniques to support the development</li> </ul>	<ul style="list-style-type: none"> <li><i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>Guest teacher coverage for 9 teachers (3 per grade) for a half day, then guest teacher coverage for another half day for 3 grades</li> </ul>

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	3)	<p>of the ability to <b>attend to precision</b>. This lesson will be taught by all grade level teachers and observed by at least one colleague before the next meeting.</p> <p><b>Next Steps for Teachers:</b> Teach the shared lesson. Observe a colleague teach the observed lesson. Prepare a reflection on the students' use of the practice standard and revisions necessary to meet the content and practice standards. Read <b>Chapter 8, Exploring Standard 7: Look For and Make Use of Structure</b> from <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i>.</p>	
<p><b>April - Look for and make use of structure</b></p> <ul style="list-style-type: none"> <li>• Reflection and debrief of lesson observation</li> <li>• Experiencing the practice standard</li> <li>• Lesson planning - including the practice standard</li> </ul>	<p>1 day (3 hours), Follow up - lesson study observations (3 hours-1 hour per teacher in grade level teams of 3)</p>	<ul style="list-style-type: none"> <li>• Teachers will work in grade level teams to debrief observations of shared lesson and make revisions for future lessons on <b>attending to precision</b>.</li> <li>• Teachers will build content knowledge and pedagogical knowledge on the practice standard. Essential questions include:             <ul style="list-style-type: none"> <li>○ <b>What do I need to do in order to see the flexibility of numbers?</b></li> <li>○ <b>Do I understand the properties of numbers?</b></li> <li>○ <b>How can I better understand patterns and functions?</b></li> </ul> </li> <li>• Teachers will have the opportunity to experience the practice standard, "<b>look for and make use of structure</b>" as a learner.</li> <li>• Teachers will work in grade level teams to create a shared lesson that embodies techniques to support the development of the ability to <b>look for and make use of structure</b>. This lesson will be taught by all grade level teachers and observed by at least one colleague before the next meeting.</li> </ul>	<ul style="list-style-type: none"> <li>• <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>• Guest teacher coverage for 9 teachers (3 per grade) for a half day, then guest teacher coverage for another half day for 3 grades</li> </ul>

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		<p><b>Next Steps for Teachers:</b> Teach the shared lesson. Observe a colleague teach the observed lesson. Prepare a reflection on the students' use of the practice standard and revisions necessary to meet the content and practice standards. . Read <a href="#">Chapter 9, Exploring Standard 8: Look For and Express Regularity in Reasoning</a> from <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i>.</p>	
<p><b>May - Look for and express regularity in repeated reasoning</b></p> <ul style="list-style-type: none"> <li>• Reflection and debrief of lesson observation</li> <li>• Experiencing the practice standard</li> <li>• Lesson planning - including the practice standard</li> </ul>	<p>1 day (3 hours), Follow up - lesson study observations (3 hours-1 hour per teacher in grade level teams of 3)</p>	<ul style="list-style-type: none"> <li>• Teachers will work in grade level teams to debrief observations of shared lesson and make revisions for future lessons on <a href="#">looking for and making use of structure</a>.</li> <li>• Teachers will build content knowledge and pedagogical knowledge on the practice standard. Essential questions include:             <ul style="list-style-type: none"> <li>○ <a href="#">How can I notice repetition more often?</a></li> <li>○ <a href="#">What do I need to do to discover shortcut and generalizations?</a></li> </ul> </li> <li>• Teachers will have the opportunity to experience the practice standard, "<a href="#">look for and express regularity in repeated reasoning</a>" as a learner.</li> <li>• Teachers will work in grade level teams to create a shared lesson that embodies techniques to support the development of the ability to <a href="#">look for and express regularity in repeated reasoning</a>. This lesson will be taught by all grade level teachers and observed by at least one colleague before the next meeting.</li> </ul> <p><b>Next Steps for Teachers:</b> Teach the shared lesson. Observe a colleague teach the observed lesson. Prepare a reflection on the students' use of the practice standard and revisions necessary</p>	<ul style="list-style-type: none"> <li>• <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>• Guest teacher coverage for 9 teachers (3 per grade) for a half day, then guest teacher coverage for another half day for 3 grades</li> </ul>

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		to meet the content and practice standards.	
<p><b>June - Wrap up</b></p> <ul style="list-style-type: none"> <li>• Reflection and debrief of lesson observation</li> <li>• Wrap up, data analysis, reflection, and goal setting.</li> </ul>	1 day (3 hours)	<ul style="list-style-type: none"> <li>• Teachers will work in grade level teams to debrief observations of shared lesson and make revisions for future lessons on <b>looking for and expressing regularity in repeated reasoning</b>.</li> <li>• Teachers will work in grade-level teams to discuss possible shortcomings in content in their curriculum and identify strengths and weaknesses in students' mathematical practices based on the lesson study data collection.</li> </ul> <p><b>Next Steps for Teachers:</b> Teachers will select a content area goal and a practice standard to further develop in the upcoming school year.</p>	<ul style="list-style-type: none"> <li>• <i>Putting the Practices Into Action: Implementing the Common Core Standards for Mathematical Practice, K-8</i> (for each PLC member)</li> <li>• Guest teacher coverage for 9 teachers (3 per grade) for a half day.</li> </ul>