

Common Core Standards for Mathematical Practice Look-for Tool

| Mathematics Practices | | Student dispositions: | Teacher actions to engage students in Practices: |
|---|---|--|--|
| Overarching habits of mind of a productive math thinker | 1. Make sense of problems and persevere in solving them | <input type="checkbox"/> Have an understanding of the situation <input type="checkbox"/> Use patience and persistence to solve problem <input type="checkbox"/> Be able to use strategies <input type="checkbox"/> Use self-evaluation and redirections <input type="checkbox"/> Communicate both verbally and written <input type="checkbox"/> Be able to deduce what is a reasonable solution Comments: | <input type="checkbox"/> Provide open-ended and rich problems <input type="checkbox"/> Ask probing questions <input type="checkbox"/> Model multiple problem-solving strategies through <i>Think- Aloud</i> <input type="checkbox"/> Promotes and values discourse <input type="checkbox"/> Cross-curricular integrations <input type="checkbox"/> Promotes collaboration <input type="checkbox"/> Probe student responses (correct or incorrect) for understanding and multiple approaches <input type="checkbox"/> Provide scaffolding appropriately <input type="checkbox"/> Provide a safe environment for learning from mistakes Comments: |
| | 6. Attend to precision | <input type="checkbox"/> Communicate with precision-orally and written <input type="checkbox"/> Use mathematics concepts and vocabulary appropriately <input type="checkbox"/> State meaning of symbols and use appropriately <input type="checkbox"/> Attend to units/labeling/tools accurately <input type="checkbox"/> Carefully formulate explanations and defend answers <input type="checkbox"/> Calculate accurately and efficiently <input type="checkbox"/> Formulate and make use of definitions with others and their own reasoning <input type="checkbox"/> Ensure reasonableness of answers <input type="checkbox"/> Perseverance through multiple-step problems Comments: | <input type="checkbox"/> Encourage students to think aloud/talk aloud <input type="checkbox"/> Explicit instruction/teacher model of think aloud/talk aloud <input type="checkbox"/> Guided Inquiry including teacher gives problem, students work together to solve problems, and debriefing time for sharing and comparing strategies <input type="checkbox"/> Probing questions targeting content of study <input type="checkbox"/> Promote mathematical lingo <input type="checkbox"/> Give room to discuss why wrong answers are wrong Comments: |
| Reasoning and Explaining | 2. Reason abstractly and quantitatively | <input type="checkbox"/> Create multiple representations <input type="checkbox"/> Interpret problems in contexts <input type="checkbox"/> Estimate first/answer reasonable <input type="checkbox"/> Make connections <input type="checkbox"/> Represent symbolically <input type="checkbox"/> Visualize problems <input type="checkbox"/> Talk about problems, real life situations <input type="checkbox"/> Attending to units <input type="checkbox"/> Using context to think about a problem Comments: | <input type="checkbox"/> Develop opportunities for and model problem solving strategies <input type="checkbox"/> Give time for processing and discussing <input type="checkbox"/> Tie content areas together to help make connections <input type="checkbox"/> Give real world situations <input type="checkbox"/> Think aloud for student benefit <input type="checkbox"/> Value invented strategies and representations <input type="checkbox"/> Less emphasis on the answer Comments: |
| | 3. Construct viable arguments and critique the reasoning of others | <input type="checkbox"/> Ask questions <input type="checkbox"/> Use examples and counter examples <input type="checkbox"/> Reason inductively and make plausible arguments <input type="checkbox"/> Use objects, drawings, diagrams, and actions <input type="checkbox"/> Students develop ideas about mathematics and support their reasoning <input type="checkbox"/> Analyze others arguments <input type="checkbox"/> Encourage the use of mathematics vocabulary Comments: | <input type="checkbox"/> Create a safe environment for risk-taking and critiquing with respect <input type="checkbox"/> Model each key student disposition <input type="checkbox"/> Provide complex, rigorous tasks that foster deep thinking <input type="checkbox"/> Provide time for student discourse <input type="checkbox"/> Plan effective questions and student grouping <input type="checkbox"/> Probe students Comments: |

| Mathematics Practices | | Students: | Teacher(s) promote(s) by: |
|-----------------------------------|---|--|---|
| Modeling and Using Tools | 4. Model with mathematics | <input type="checkbox"/> Realize they use mathematics (numbers and symbols) to solve/work out real-life situations <input type="checkbox"/> Analyze relationships to draw conclusions <input type="checkbox"/> Interpret mathematical results in context <input type="checkbox"/> Show evidence that they can use their mathematical results to think about a problem and determine if the results are reasonable. If not, go back and look for more information <input type="checkbox"/> Make sense of the mathematics Comments: | <input type="checkbox"/> Allow time for the process to take place (model, make graphs, etc.) <input type="checkbox"/> Model desired behaviors (think alouds) and thought processes (questioning, revision, reflection/written) <input type="checkbox"/> Make appropriate tools available <input type="checkbox"/> Create an emotionally safe environment where risk taking is valued <input type="checkbox"/> Provide meaningful, real world, authentic, performance-based tasks (non traditional work problems) <input type="checkbox"/> Discourse <input type="checkbox"/> Investigations Comments: |
| | 5. Use appropriate tools strategically | <input type="checkbox"/> Choose the appropriate tool to solve a given problem and deepen their conceptual understanding (paper/pencil, ruler, base 10 blocks, compass, protractor) <input type="checkbox"/> Choose the appropriate technological tool to solve a given problem and deepen their conceptual understanding (e.g., spreadsheet, geometry software, calculator, web 2.0 tools) <input type="checkbox"/> Compare the efficiency of different tools <input type="checkbox"/> Recognize the usefulness and limitations of different tools Comments: | <input type="checkbox"/> Maintain knowledge of appropriate tools <input type="checkbox"/> Effective modeling of the tools available, their benefits and limitations <input type="checkbox"/> Model a situation where the decision needs to be made as to which tool should be used <input type="checkbox"/> Compare/contrast effectiveness of tools <input type="checkbox"/> Make available and encourage use of a variety of tools Comments: |
| Seeing structure and generalizing | 7. Look for and make use of structure | <input type="checkbox"/> Look for, interpret, and identify patterns and structures <input type="checkbox"/> Make connections to skills and strategies previously learned to solve new problems/tasks independently and with peers <input type="checkbox"/> Reflect and recognize various structures in mathematics <input type="checkbox"/> Breakdown complex problems into simpler, more manageable chunks <input type="checkbox"/> Be able to “step back” / shift perspective <input type="checkbox"/> Value multiple perspectives Comments: | <input type="checkbox"/> Be quiet and structure opportunities for students to think aloud <input type="checkbox"/> Facilitate learning by using open-ended questioning to assist students in exploration <input type="checkbox"/> Careful selection of tasks that allow for students to discern structures or patterns to make connections <input type="checkbox"/> Allow time for student discussion and processing in place of fixed rules or definitions <input type="checkbox"/> Foster persistence/stamina in problem solving <input type="checkbox"/> Through practice and modeling time for students Comments: |
| | 8. Look for and express regularity in repeated reasoning | <input type="checkbox"/> Identify patterns and make generalizations <input type="checkbox"/> Continually evaluate reasonableness of intermediate results <input type="checkbox"/> Maintain oversight of the process <input type="checkbox"/> Search for and identify and use short-cuts Comments: | <input type="checkbox"/> Provide rich and varied tasks that allow students to generalize relationships and methods, and build on prior mathematical knowledge <input type="checkbox"/> Provide adequate time for exploration <input type="checkbox"/> Provide time for dialogue and reflection, peer collaboration <input type="checkbox"/> Ask deliberate questions that enable students to reflect on their own thinking <input type="checkbox"/> Create strategic and intentional check in points during student work time Comments: |

- All indicators are not necessary for providing full evidence of practice(s). Each practice may not be evident during every lesson.
- Document originally created by NCSM Summer Leadership Academy then edited by Region 2 Algebra Forum