

# Puzzle Talks/Math Practices

| Action                       | Math Practices (habits of mind)  | Puzzle Talks & Extensions   | Facilitation Questions  |
|------------------------------|--|---|---|
| <b>Notice &amp; Wonder</b>   | <p><b>SMP 1:</b> start by explaining to themselves the meaning of the problem &amp; looking for entry points to its solution</p> <p><b>SMP 1:</b> make conjectures about the form &amp; meaning of the solution &amp; plan a solution pathway rather than simply jumping into a solution attempt</p>   | <p><b>Focus</b> thinking on what is important, make connections to prior knowledge. Pause &amp; take notice of the information given, make sense of the problem, identify the question, &amp; connect to previous knowledge</p>   | <ul style="list-style-type: none"> <li>• What do you notice?</li> <li>• What do you wonder?</li> <li>• What question is the problem asking?</li> </ul>  |
| <b>Predict &amp; Justify</b> | <p><b>SMP 1:</b> analyze givens, constraints, relationships, &amp; goals</p> <p><b>SMP 3:</b> make conjectures &amp; build a logical progression of statements to explore the truth of their conjectures</p>   | <p><b>Uncover</b> students' thinking around how they plan to address the problem; where they will enter the problem; name the strategy; what they think will happen and why; and what a reasonable solution should look like.</p> | <ul style="list-style-type: none"> <li>• What is your strategy?</li> <li>• What do you think will happen when you try it?</li> </ul>  |
| <b>Test &amp; Observe</b>    | <p><b>SMP 1:</b> monitor &amp; evaluate progress &amp; change course if necessary</p> <p><b>SMP 4:</b> apply what they know are comfortable making assumptions &amp; approximations to simplify a complicated situation, realizing that these may need revision later</p>  | <p><b>Engage</b> in thinking &amp; processing the results of employing the strategy to gain understanding before analyzing.</p>   | <ul style="list-style-type: none"> <li>• Try your strategy.</li> <li>• Describe what happened</li> </ul>  |
| <b>Analyze &amp; Learn</b>   | <p><b>SMP 1:</b> check their answers to problems using a different method, &amp; they continually ask themselves, "Does this make sense?"</p> <p><b>SMP 3:</b> listen or read the arguments of others, decide whether they make sense, &amp; ask useful questions to clarify or improve the arguments</p> <p><b>SMP 4:</b> routinely interpret their mathematical results in the context of the situation &amp; reflect on whether the results make sense, possibly improving the model if it has not served its purpose</p> | <p><b>Facilitate</b> thinking around evaluating strategy, analyzing feedback/results &amp; revising understanding. Examine thinking, to reinforce strategies, or examine errors &amp; learning from mistakes.</p>                 | <ul style="list-style-type: none"> <li>• What did you learn?</li> <li>• How will you use what you learned?</li> </ul>   |
| <b>Extend &amp; Connect</b>  | <p><b>SMP 1:</b> understand the approaches of others to solving complex problems &amp; identify correspondences between different approaches</p> <p><b>SMP 3:</b> justify their conclusions, communicate them to others, &amp; respond to the arguments of others</p>  | <p><b>Stretch</b> thinking &amp; make connections with what was learned to existing schemas. Deepen understanding of the concept &amp; apply learning to novel situations</p>   | <ul style="list-style-type: none"> <li>• How does what you learned support/challenge your understanding of (the concept)?</li> <li>• What would happen if...?</li> <li>• How would you apply this concept to (this) situation?</li> </ul> |