Implementing Standards for Mathematical Practices

**#1 Make sense of problems and persevere in solving them.**

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|  |  | **Summary of Standards for Mathematical Practice** | **Questions to Develop Mathematical Thinking** |  |
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|  | **1. Make sense of problems and persevere in solving them.** | How would you describe the problem in your own words? |  |
|  | • | Interpret and make meaning of the problem looking for starting points. Analyze | How would you describe what you are trying to find? |  |
|  |  | what is given to explain to themselves the meaning of the problem. | What do you notice about...? |  |
|  | • | Plan a solution pathway instead of jumping to a solution. | What information is given in the problem? |  |
|  | • | Monitor the progress and change the approach if necessary. | Describe the relationship between the quantities. |  |
|  | Describe what you have already tried. What might you change? |  |
|  | • | See relationships between various representations. |  |
|  | Talk me through the steps you’ve used to this point. |  |
|  | • | Relate current situations to concepts or skills previously learned and connect |  |
|  | What steps in the process are you most confident about? |  |
|  |  | mathematical ideas to one another. |  |
|  |  | What are some other strategies you might try? |  |
|  | • | Students ask themselves, “Does this make sense?” and understand various |  |
|  | What are some other problems that are similar to this one? |  |
|  |  | approaches to solutions. |  |
|  |  | How might you use one of your previous problems to help you begin? |  |
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|  |  |  | How else might you organize...represent...show...? |  |
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**Implementation Characteristics: What does it look like in planning and delivery?**

**Task**: elements to keep in mind when determining learning experiences **Teacher:** actions that further the development of math practices within their students

**Task:**

* Requires students to engage with conceptual ideas that underlie the procedures to complete the task and develop understanding.
* Requires cognitive effort - while procedures may be followed, the approach or pathway is not explicitly suggested by the task, or task instructions and multiple entry points are available. The problem focuses students’ attention on a mathematical idea and provides an opportunity to develop and/or use mathematical habits of mind.
* Allows for multiple entry points and solution paths as well as, multiple representations, such as visual diagrams, manipulatives, symbols, and problem situations. Making connections among multiple representations to develop meaning.
* Requires students to access relevant knowledge and experiences and make appropriate use of them in working through the task.
* Requires students to defend and justify their solutions.

**Teacher:**

* Allows students time to initiate a plan; uses question prompts as needed to assist students in developing a pathway.
* Continually asks students if their plans and solutions make sense.
* Questions students to see connections to previous solution attempts and/or tasks to make sense of current problem.
* Consistently asks to defend and justify their solution by comparing solution paths.
* Differentiates to keep advanced students challenged during work time

*Institute for Advanced Study/Park City Mathematics Institute*/ Created by Learning Services, Modified by Melisa Hancock, 2013

Reflections on This Week: Mathematical Practice 1

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| What did you do to incorporate this practice into your classroom this week? Explain. |
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| Did you experience any difficulties incorporating this practice into your classroom this week? Explain. |
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| Did the use of the checklist help you to incorporate this practice into your classroom this week? Explain. |
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| Did the use of the Weebly module help you to incorporate this practice into your classroom this week? Explain. |
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