Implementing Standards for Mathematical Practices

**#3 Construct viable arguments and critique the reasoning of others.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Summary of Standards for Mathematical Practice** | **Questions to Develop Mathematical Thinking** |  |
|  |  |  |  |
|  | **3. Construct viable arguments and critique the reasoning of others.** | What mathematical evidence supports your solution? |  |
|  |  |  |
|  | • Analyze problems and use stated mathematical assumptions, definitions, and | How can you be sure that...? / How could you prove that...? Will it still work if...? |  |
|  | established results in constructing arguments. | What were you considering when...? |  |
|  | • Justify conclusions with mathematical ideas. | How did you decide to try that strategy? |  |
|  | • Listen to the arguments of others and ask useful questions to determine if an | How did you test whether your approach worked? |  |
|  | argument makes sense. | How did you decide what the problem was asking you to find? (What was unknown?) |  |
|  | • Ask clarifying questions or suggest ideas to improve/revise the argument. | Did you try a method that did not work? Why didn’t it work? Would it ever work? |  |
|  | Why or why not? |  |
|  | • Compare two arguments and determine correct or flawed logic. |  |
|  | What is the same and what is different about...? |  |
|  |  |  |
|  |  | How could you demonstrate a counter-example? |  |
|  |  |  |  |

**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:**

* Is structured to bring out multiple representations, approaches, or error analysis.
* Embeds discussion and communication of reasoning and justification with others.
* Requires students to provide evidence to explain their thinking beyond merely using computational skills to find a solution.
* Expects students to give feedback and ask questions of others’ solutions.

**Teacher:**

* Encourages students to use proven mathematical understandings, (definitions, properties, conventions, theorems, etc.), to support their reasoning.
* Questions students so they can tell the difference between assumptions and logical conjectures.
* Asks questions that require students to justify their solution and their solution pathway.
* Prompts students to respectfully evaluate peer arguments when solutions are shared.
* Asks students to compare and contrast various solution methods.
* Creates various instructional opportunities for students to engage in mathematical discussions (whole group, small group, partners, etc.).

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

Reflections on This Week: Mathematical Practice 3

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