**Written Mathematical Argumentation Rubric**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Category** | **Description**  **Examples/Non-Examples** | **0** | **1** | **2** | **3** |
| 1. The **claim** presents the position being taken. | The claim is what is to be shown true or not true.  *Example:* No, he won’t have enough. He won’t have 16 ounces.  *Non-example:* I multiplied 3 times 5 and got 15, so 15 ounces. | No claim | Claim is included but not clear | Claim is clearly articulated | --- |
| 2. **Evidence** supports the claim. | Evidence can take the form of equations, tables, charts, diagrams, graphs, words, symbols, etc. It is one’s “work” which provides the information to show something is true/false.  *Example:* No, he won’t have enough because 1.5 x 10 is 15 ounces and is not the needed 16 ounces.  *Non-example:* No, he won’t have enough because he has less than 16 ounces, and not the needed 16 ounces. | No evidence | Minimal evidence is included, or evidence is unrelated to the claim, or major mathematical error(s) are present | Some evidence is missing or minor mathematical error(s) are present | Sufficient evidence is presented and there are no mathematical error(s) |
| 3. The **warrants** connect the evidence to the claim. (Note that some quality mathematical arguments may not include a warrant.) | Warrants can take the form of definitions, theorems, logical inferences, and agreed upon facts. Warrants collectively chain the evidence together to show the claim is true or false.  *Example:* No, he won’t have enough because he has 15 ounces total, which is 1 ounce short. I multiplied 3 times 5 to get 15 because there were 3 ounces of lemon juice for every 2 lemons, and with 10 lemons, that made 5 sets of 2 lemons. [Note: the warrants provided here are for the 3 and the 5. The warrant for using multiplication is not included. This example could have used 10 times 1.5 as well.]  *Non-example:* No, he won’t have enough because I multiplied 3 x 5 and got 15. | No warrant | Minimal support for evidence, or warrant unrelated to evidence is included or major conceptual error(s) are evident | Some evidence lacks a necessary warrant or minor conceptual error(s) are evident | Sufficient warrant and no conceptual error(s) |
| 4. The **mechanics** help convey precise ideas that flow. | The language used must be at a sufficient level of precision to support the argument and with sufficient clarity.  *Example:* No, he won’t have enough lemon juice. He needs 16 ounces of juice, but he only has 15 ounces. I figured out he had only 15 ounces of juice by multiplying 10 lemons times 1.5 ounces per lemon. 10 x 1.5 = 15.  *Non-example:* No, he won’t make it because all together it’s 15 and it’s less. (Note the lack of precision with language.) | The language has major imprecisions or does not flow, thus the ideas are unclear | The language has some imprecisions or thus the ideas are somewhat clear, thus the ideas are somewhat unclear but can be inferred | The language is precise and the ideas flow clearly | --- |