**Argumentation**

**What counts? What criteria?**

One important component of supporting students in generating sound mathematical arguments is helping to make clear what a mathematical argument is and the criteria of what “counts” as a mathematical argument.

Here are two sets from various sources:

**SET 1:**

**Clarifying criteria: Mathematical arguments – Class version**

1. It can be used to convince not only myself or a friend but also a [skeptic]. It should not require someone to make a leap of faith (e.g., “This is how it is” or “You need to believe me that this [pattern continues forever]).
2. It should help someone understand why a statement is true (e.g., why a patterns works the way it does).
3. It should use ideas that our class knows already or is able to understand (e.g., equations, pictures, diagrams).
4. It should contain no errors (e.g., in calculations).
5. It should be clearly presented.

From *Developing Essential Understanding of Proof and Proving: Grades 9 – 12,* NCTM.

Note how much the classroom community is implicated in many of these – convincing others, clearly presenting, helping others understand *why* something.

**SET 2:**

**JUSTIFICATION -** *JAGUAR Project Teachers*

What are the components of an argument that functions as a justification in our classroom community?

* based on ideas that are valid, understood and agreed upon among a community
* explanation that conveys the ideas verbally or written
* states what is to be proven and (completely)links together the ideas to build to the conclusion

Purposes:

* shows some claim is true/false
* to communicate/ to support meaning making and learning