**Task and Resource Categorization**

***Considering the potential of a tool to support mathematical argumentation***

There are five classroom tasks or resources included in this packet.

Review as many as you can. Consider the question: *Does this task ask students to engage in MP3? That is, if students respond to the task prompts in a reasonable way, will they engage in constructing viable arguments and critiquing the reasoning of others?[[1]](#footnote-1)*

* Record your response: Yes, Potentially, Unlikely.
* Record your reasoning: … because …. (brief notes are fine)
* Optional: Record any questions you’d like to raise with the group.

**Task A:**

**The Handshake Problem**

Suppose there are 10 people at a party, and every person shakes hands with every other person at the party. How many distinct handshakes are there? Use a picture method to solve and show your answer.

**Task A:**

*Does this task ask students to engage in MP3? That is, if students respond to the task prompts in a reasonable way, will they engage in constructing viable arguments and critiquing the reasoning of others?*

* Your response: Yes, Potentially, Unlikely.
* Your reasoning: Because ….
* Optional: Record any questions you’d like to raise with the group.

**Task B:**



(source: Smarter Balanced sample problem)

**Task B:**

*Does this task ask students to engage in MP3? That is, if students respond to the task prompts in a reasonable way, will they engage in constructing viable arguments and critiquing the reasoning of others?*

* Your response: Yes, Potentially, Unlikely.
* Your reasoning: Because ….
* Optional: Record any questions you’d like to raise with the group.

**Task C:**

**The Shape Challenge**

Pradip’s class was having a Geometry Carnival. Pradip sat down at the *‘Can you create this shape?’* table. Pradip’s question was: Is it possible to make a triangle with two right angles?

If you were Pradip, how would you respond to this question? Defend your answer.

**Task C:**

*Does this task ask students to engage in MP3? That is, if students respond to the task prompts in a reasonable way, will they engage in constructing viable arguments and critiquing the reasoning of others?*

* Your response: Yes, Potentially, Unlikely.
* Your reasoning: Because ….
* Optional: Record any questions you’d like to raise with the group.

**Resource D:** *This is a classroom rubric for open-ended response items*

**RUBRIC: Open ended Problem Solving Tasks**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| CATEGORY  | **4**  | **3**  | **2**  | **1**  |
| **Mathematical Concepts**  | Explanation shows complete understanding of the mathematical concepts used to solve the problem(s).  | Explanation shows substantial understanding of the mathematical concepts used to solve the problem(s).  | Explanation shows some understanding of the mathematical concepts needed to solve the problem(s).  | Explanation shows very limited understanding of the underlying concepts needed to solve the problem(s) OR is not written.  |
| **Mathematical Reasoning**  | Uses complex and refined mathematical reasoning.  | Uses effective mathematical reasoning  | Some evidence of mathematical reasoning.  | Little evidence of mathematical reasoning.  |
| **Explanation**  | Explanation is detailed and clear.  | Explanation is clear.  | Explanation is a little difficult to understand, but includes critical components.  | Explanation is difficult to understand and is missing several components OR was not included.  |
| **Neatness and Organization**  | The work is presented in a neat, clear, organized fashion that is easy to read.  | The work is presented in a neat and organized fashion that is usually easy to read.  | The work is presented in an organized fashion but may be hard to read at times.  | The work appears sloppy and unorganized. It is hard to know what information goes together.  |
| **Strategy/ Procedures**  | Uses an efficient and effective strategy to solve the problem(s).  | Uses an effective strategy to solve the problem(s), with perhaps some small errors.  | Strategy is apparent, but does not lead to problem being solved, or chosen strategy is implemented with significant errors.  | Strategy is not clear, or numerous errors produced no result, or a result that was not reasonable.  |

**Resource D:**

*Does this task ask students to engage in MP3? That is, if students respond to the task prompts in a reasonable way, will they engage in constructing viable arguments and critiquing the reasoning of others?*

* Your response: Yes, Potentially, Unlikely.
* Your reasoning: Because ….
* Optional: Record any questions you’d like to raise with the group.

**Task E**:

Antonio and Juan are in a 4-mile bike race. The graph below shows the distance of each racer (in miles) as a function of time (in minutes). (from illustrativemath.org)



1. Who wins the race? How do you know?

b. Imagine you were watching the race and had to announce it over the radio, write a little story describing the race.

**Task E:**

*Does this task ask students to engage in MP3? That is, if students respond to the task prompts in a reasonable way, will they engage in constructing viable arguments and critiquing the reasoning of others?*

* Your response: Yes, Potentially, Unlikely.
* Your reasoning: Because ….
* Optional: Record any questions you’d like to raise with the group.

1. Note: There are other types of mathematical activities associated with argumentation, many of which are explicitly acknowledged and valued by Smarter Balanced assessments (e.g., identifying and testing a value in relation to a claim). For this activity, we focus on two of these mathematical activities, constructing viable arguments and critiquing the reasoning of others. [↑](#footnote-ref-1)