

Lesson Planning Rubrics

Part 1

Criteria		Possible Points	Points Earned
Selecting and Setting Up the Task*	HEADING	1	
	RATIONALE AND BACKGROUND		
	<ul style="list-style-type: none"> ○ The task is problem based: <ul style="list-style-type: none"> ▪ The solution is not known in advance to students. ▪ The task has multiple entry points for students. ▪ The task can be solved in multiple ways and/or uses multiple representations ▪ The task requires justifications and explanations for answers and methods. ▪ The task requires discussion by students. ▪ The task requires cognitive effort by students. 	3	
	<ul style="list-style-type: none"> ○ The goals: <ul style="list-style-type: none"> ▪ Goal statement describes the mathematics concept students will understand more deeply as a result of the lesson. The goal is a statement ABOUT MATHEMATICS. ▪ Goal is aligned with the standards and objectives. 	2	
	<ul style="list-style-type: none"> ○ Prior knowledge necessary for students to engage in the task is described 	1	
	LESSON STANDARDS AND OBJECTIVES		
	<ul style="list-style-type: none"> ○ Objectives: <ul style="list-style-type: none"> ▪ Describe what the students will be doing during the lesson to work towards the goal ▪ Aligned with the goal of the lesson ▪ Aligned with the PA Standard, Assessment Anchor, and Eligible Content 	1	
	<ul style="list-style-type: none"> ○ PA Core Standard (number and description), Assessment Anchor and Eligible Content (number and description) are listed. 	1	
	<ul style="list-style-type: none"> ○ Standards for Mathematical Practice are listed and appropriate for the given task 	1	
	MATERIALS/RESOURCES/EXPECTATIONS		
	<ul style="list-style-type: none"> ○ Copy of problem-based task, with citation, is included 	1	
	<ul style="list-style-type: none"> ○ Multiple solutions to the task are included, including potential incorrect solutions 	3	
	<ul style="list-style-type: none"> ○ Description of how students will work is included. 	1	

* NOTE: The format of the Lesson Planning rubric are based on the work of Smith, Bill, and Hughes (2008) in "Thinking through a Lesson: Successfully Implementing High Level Tasks" published in Mathematics Teaching in the Middle School, October 2008.

Part 2

Supporting Students' Learning of Math	Lesson Body		
	○ Lesson relates to the stated goals and objectives	2	
	○ Describes in sequence the experiences that will occur during the lesson.	4	
	○ Includes errors, misconceptions, and struggles students may face as well as potential responses to students.	2	
	○ Lists potential questions to be asked during the lesson (the majority of which are high level or focusing questions) and anticipated student responses:	4	
	○ Majority of questions are focusing or high level	2	
	○ Includes plans for students who need adapted instruction or enrichment	1	
TOTAL		15	

Part 3

Summarizing and Assessing Understanding	○ Lists higher level questions to generate discussion and anticipated student responses.	4	
	○ Lists higher level questions to assess and advance students' understanding and anticipated students responses.	4	
	○ Majority of questions are focusing or high level.	3	
	○ Questions address the goals and objectives of the lesson.	4	
	TOTAL	15	

* NOTE: The format of the Lesson Planning rubric are based on the work of Smith, Bill, and Hughes (2008) in "Thinking Through a Lesson: Successfully Implementing High Level Tasks" published in Mathematics Teaching in the Middle School, October 2008.

Questioning Rubric

Question type		Description	Examples
1	Gathering information	Students recall facts, definitions, or procedures.	<p>When you write an equation, what does the equal sign tell you?</p> <p>What is the formula for finding the area of a rectangle?</p> <p>What does the interquartile range indicate for a set of data?</p>
2	Probing thinking	Students explain, elaborate, or clarify their thinking, including articulating the steps in solution methods or the completion of a task.	<p>As you drew that number line, what decisions did you make so that you could represent $\frac{7}{4}$ on it?</p> <p>Can you show and explain more about how you used a table to find the answer to the Smartphone Plans task?</p> <p>It is still not clear how you figured out that 20 was the scale factor, so can you explain it another way?</p>
3	Making the mathematics visible	Students discuss mathematical structures and make connections among mathematical ideas and relationships.	<p>What does your equation have to do with the band concert situation?</p> <p>How does that array relate to multiplication and division?</p> <p>In what ways might the normal distribution apply to this situation?</p>
4	Encouraging reflection and justification	Students reveal deeper understanding of their reasoning and actions, including making an argument for the validity of their work.	<p>How might you prove that 51 is the solution?</p> <p>How do you know that the sum of two odd numbers will always be even?</p> <p>Why does plan A in the Smartphone Plans task start out cheaper but become more expensive in the long run?</p>

from Principles to Actions, p. 36-37

Facilitating Discussion Rubric

Facilitate meaningful mathematical discourse Teacher and student actions	
What are teachers doing?	What are students doing?
<p>Engaging students in purposeful sharing of mathematical ideas, reasoning, and approaches, using varied representations.</p> <p>Selecting and sequencing student approaches and solution strategies for whole-class analysis and discussion.</p> <p>Facilitating discourse among students by positioning them as authors of ideas, who explain and defend their approaches.</p> <p>Ensuring progress toward mathematical goals by making explicit connections to student approaches and reasoning.</p>	<p>Presenting and explaining ideas, reasoning, and representations to one another in pair, small-group, and whole-class discourse.</p> <p>Listening carefully to and critiquing the reasoning of peers, using examples to support or counterexamples to refute arguments.</p> <p>Seeking to understand the approaches used by peers by asking clarifying questions, trying out others' strategies, and describing the approaches used by others.</p> <p>Identifying how different approaches to solving a task are the same and how they are different.</p>

from *Principles to Actions*, p. 35