

Mathematics Problem Solving Scoring Guide
Based on a Rubric from Northwest Regional Educational Laboratory

	Emerging (1)	Developing (2)	Proficient (3)	Exemplary (4)
<p>Introduction</p> <p>Key Question: <i>Does the student's interpretation of the problem accurately reflect the important mathematics in the problem?</i></p>	<ul style="list-style-type: none"> • The data you showed was inaccurate. • You used the wrong information in trying to solve the problem. • You did not state what the problem is. • You did not indicate where you were headed in solving the problem. 	<ul style="list-style-type: none"> • The data you show is accurate, but poorly organized. • You used some but not all of the relevant information from the problem. • You stated what the problem is incorrectly. • You partially indicated where you were headed with your solution. 	<ul style="list-style-type: none"> • Your data is organized and accurate, but includes extraneous information not needed to solve the problem. • You used all relevant information from the problem in your solution. • You stated what part of the problem is correctly, but failed to mention other aspects of the problem. • You indicated where you were headed with your solution. 	<ul style="list-style-type: none"> • The data shown is only the data needed to solve the problem and it is well organized and accurate. • You uncovered hidden or implied information not readily apparent. • You stated what all parts of the problem are correctly. • You indicated the starting and ending points for your solution.

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<p>Methods</p> <p>Key Question: <i>Is there evidence that the student proceeded from a plan, applied appropriate strategies, and followed a logical and verifiable process toward a solution?</i></p>	<ul style="list-style-type: none"> • Your mathematical representations of the problem were incorrect. • Your strategies were not appropriate for the problem. • You didn't seem to know where to begin. • Your reasoning did not support your work. • There was no apparent relationship between your representations and the task. • Your approach to the problem would not lead to a correct solution. 	<ul style="list-style-type: none"> • You used an oversimplified approach to the problem. • You offered little or no explanation of your strategies. • Your choice of forms to represent the problem was inefficient or inaccurate. • Some of your representations accurately depicted aspects of the problem. • You sometimes made leaps in your logic that were hard to follow. • Your process would lead to a partially complete solution. 	<ul style="list-style-type: none"> • You chose appropriate, efficient strategies for solving the problem. • You justified each step of your work. • Your choices of mathematical representations of the problem were appropriate. • The logic of your solution was apparent. • Your process would lead to a complete, correct solution of the problem. 	<ul style="list-style-type: none"> • You chose innovative and insightful strategies for solving the problem. • Your choice of mathematical representations helped clarify the problem's meaning. • You used a sophisticated approach to solve the problem. • You chose mathematical procedures that would lead to an elegant solution.

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<p>Results</p> <p>Key Question: <i>Given the approach taken by the student, is the solution performed in an accurate and complete manner?</i></p>	<ul style="list-style-type: none"> • Errors in computation were serious enough to flaw your solution. • Your mathematical representations were inaccurate. • You labeled incorrectly. • Your solution was incorrect. • You gave no evidence of how you arrived at your answer. • There was no apparent logic to your solution. 	<ul style="list-style-type: none"> • You made minor computational errors. • Your representations were essentially correct but not accurately or completely labeled. • Your inefficient choice of procedures impeded your success. • The evidence for your solution was inconsistent or unclear. 	<ul style="list-style-type: none"> • Your computations were essentially accurate. • All visual representations were complete and accurate. • Your solution was essentially correct. • Your work clearly supported your solution. 	<ul style="list-style-type: none"> • All aspects of your solution were completely accurate. • You used multiple representations for verifying your solution. • You showed multiple ways to compute your answer. • You proved that your solution was correct and that your approach was valid.
<p>Discussion</p> <p>Key Question: <i>Does the student grasp the deeper structure of the problem and see how the process used to solve this problem connects it to other problems or "real-world" applications?</i></p>	<ul style="list-style-type: none"> • You were unable to recognize patterns and relationships. • You found a solution and then stopped. • You found no connections to other disciplines or mathematical concepts. 	<ul style="list-style-type: none"> • You recognized some patterns and relationships. • You found multiple solutions but not all were correct. • Your solution hinted at a connection to an application or another area of mathematics. 	<ul style="list-style-type: none"> • You recognized important patterns and relationships in the problem. • You found multiple solutions using different interpretations of the problem. • You connected your solution process to other problems, areas of mathematics or applications. 	<ul style="list-style-type: none"> • You created a general rule or formula for solving related problems. • You related the underlying structure of the problem to other similar problems. • You noted possible sources of error or ambiguity in the problem. • Your connection to a real-life application was accurate and realistic.

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<p>Communication</p> <p>Key Question: <i>Was I able to easily understand the student's thinking or did I have to make inferences and guesses about what they were trying to do?</i></p>	<ul style="list-style-type: none"> • You had many spelling and/or grammatical errors that detract from your argument. • I couldn't follow your thinking. • Your explanation seemed to ramble. • You gave no explanation for your work. • You did not seem to have a sense of what your audience needed to know. • Your mathematical representations did not help clarify your thinking. • You used mathematical terminology incorrectly. 	<ul style="list-style-type: none"> • You had spelling and/or grammatical errors, but they do not detract from your argument. • Your solution was hard to follow in places. • I had to make inferences about what you meant in places. • You weren't able to sustain your good beginning. • Your explanation was redundant in places. • Your mathematical representations were somewhat helpful in clarifying your thinking. • You used mathematical terminology imprecisely. 	<ul style="list-style-type: none"> • There were no spelling and/or grammatical errors. • I understood what you did and why you did it. • Your solution was well organized and easy to follow. • Your solution flowed logically from one step to the next. • You used an effective format for communicating. • Your mathematical representations helped clarify your solution. • You used mathematical terminology correctly. 	<ul style="list-style-type: none"> • Your explanation was clear and concise. • You communicated concepts with precision. • Your mathematical representations expanded on your solution. • You gave an in-depth explanation of your reasoning. • You used mathematical terminology precisely.