

Generic Rubric for Mathematical Processes

Thinking

Problem Solving

Criteria	Below Level 1	Level 1	Level 2	Level 3	Level 4
	Specific Feedback				
Selects, sequences and applies mathematical processes appropriate to the task		Selects, sequences and applies mathematical processes to the assigned task with significant prompting	Selects, sequences and applies mathematical processes to the assigned task with minimal prompting	Selects, sequences and applies mathematical processes to the assigned task independently	Selects, sequences and applies mathematical processes to the assigned task independently with a broader view of the task
Uses critical thinking skills to solve a problem		Uses minimal logic and precision in mathematical reasoning to solve problems	Uses logic to solve problems but lacks precision in mathematical reasoning	Solves problems logically and with precision in mathematical reasoning	Demonstrates a sophisticated level of mathematical reasoning and precision in solving problems

Reasoning and Proving

Criteria	Below Level 1	Level 1	Level 2	Level 3	Level 4
	Specific Feedback				
Formulates and defends a hypothesis or conjecture		Forms a hypothesis or conjecture that connects few aspects of the problem	Forms a hypothesis or conjecture that connects some of the pertinent aspects of the problem	Forms a hypothesis or conjecture that connects pertinent aspects of the problem	Forms a hypothesis or conjecture that connects aspects of the problem with a broader view of the problem
Makes inferences, draws conclusions and gives justifications		Makes limited connections to the problem-solving process and models presented when justifying answers	Makes some connections to the problem-solving process and models presented when justifying answers	Makes direct connections to the problem-solving process and models presented when justifying answers	Makes direct and insightful connections to the problem-solving process and models presented when justifying answers
Interprets mathematical language, charts, and graphs		Misinterprets a critical element of the information, but makes some reasonable statements	Misinterprets part of the information, but makes some reasonable statements	Interprets the information correctly and makes reasonable statements	Interprets the information correctly, and makes insightful statements

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Reflecting					
Criteria	Below Level 1 Specific Feedback	Level 1	Level 2	Level 3	Level 4
Uses metacognitive skills to determine which mathematical processes to revisit in order to reach the goal		Applies metacognitive skills with significant prompting in determining which mathematical process to revisit in order to reach the goal	Applies metacognitive skills with minimal prompting in determining which mathematical process to revisit in order to reach the goal	Applies metacognitive skills independently in determining which mathematical process to revisit in order to reach the goal	Applies metacognitive skills independently in determining which mathematical process to revisit in order to reach the goal with a broader view of the goal
Reflects on the reasonableness of answers		Makes minimal connections between a prior estimate and the solution	Makes some connections between a prior estimate and the solution	Makes appropriate connections between a prior estimate and the solution	Makes appropriate connections between a prior estimate and the solution and provides insightful comments
Application					
Selecting Tools and Computational Strategies					
Criteria	Below Level 1 Specific Feedback	Level 1	Level 2	Level 3	Level 4
Selects and uses tools and strategies to solve a problem		Selects and applies appropriate tools and strategies, with major errors, omissions, or mis-sequencing	Selects and applies appropriate tools and strategies, with minor errors, omissions or mis-sequencing	Selects and applies appropriate tools and strategies accurately, and in a logical sequence	Selects and applies appropriate and efficient tools and strategies, accurately to create mathematically elegant solutions
Connecting					
Criteria	Below Level 1 Specific Feedback	Level 1	Level 2	Level 3	Level 4
Makes connections among mathematical concepts and procedures		Makes weak connections among mathematical concepts and procedures	Makes simple connections among mathematical concepts and procedures	Makes appropriate connections among mathematical concepts and procedures	Makes strong connections among mathematical concepts and procedures
Relates mathematical ideas to situations drawn from other contexts		Transfers ideas to other contexts and makes limited connections	Transfers ideas to other contexts and makes simple connections	Transfers ideas to other contexts and makes appropriate connections	Transfers ideas to other contexts and makes unique, original or insightful connections

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Communication

Representing

Criteria	Below Level 1 Specific Feedback	Level 1	Level 2	Level 3	Level 4
Creates a model to represent the problem (e.g., numerical, algebraic, graphical, physical, or scale model, by hand or using technology)		Creates a model that represents the problem with limited effectiveness; representing little of the range of the data	Creates a model that represents the problem with some effectiveness; representing some of the range of the data	Creates a model that represents the problem with considerable effectiveness; representing most of the range of the data	Creates a model that represents the problem with a high degree of effectiveness; representing the full range of the data
Makes connections between numeric, graphical and algebraic representations		Makes limited connections between numeric, graphical and algebraic representations	Makes some connections between numeric, graphical and algebraic representations	Makes appropriate connections between numeric, graphical and algebraic representations	Makes strong and insightful connections between numeric, graphical and algebraic representations
Translates from one representation to another as appropriate to the problem		Translates representation with major errors when solving a problem	Translates representations with some errors when solving a problem	Translates representations appropriately when solving a problem	Translates representations appropriately and with insight when solving a problem

Communicating

Criteria	Below Level 1 Specific Feedback	Level 1	Level 2	Level 3	Level 4
Uses clear language to make presentations, and to explain and justify solutions when reporting for various purposes and different audiences		Uses unclear language to make presentations, and to explain and justify solutions when reporting for various purposes and different audiences	Uses language that is somewhat unclear to make presentations, and to explain and justify solutions when reporting for various purposes and different audiences	Uses clear language to make presentations, and to explain and justify solutions when reporting for various purposes and different audiences	Uses clear and precise language to make presentations, and to explain and justify solutions when reporting for various purposes and different audiences
Uses mathematical symbols, labels, units and conventions correctly		Sometimes uses mathematical symbols, labels and conventions correctly	Usually uses mathematical symbols, labels and conventions correctly	Consistently uses mathematical symbols, labels and conventions correctly	Consistently uses mathematical symbols, labels and conventions, presenting novel or insightful opportunities for their use
Uses mathematical vocabulary appropriately		Uses common language in place of mathematical vocabulary or uses key mathematical terms with major errors	Uses mathematical vocabulary with minimal errors or uses some common language in place of vocabulary	Uses mathematical vocabulary appropriately	Consistently uses mathematical vocabulary appropriately, presenting novel or insightful opportunities for its use