Standards and Rubrics for Assessing General Education in Mathematics
Written by the Discipline Panel in Mathematics – (09/08/05)

Learning Outcome #1: Students will demonstrate the ability to interpret and draw inferences from mathematical models such as formulas, graphs, tables, and schematics.

Rubric:

Level	
Completely Correct (CC)	• The student demonstrates the ability to interpret the variables, parameters, and/or other specific information given in the model. • The student uses the model to draw inferences about the situation being modeled in a manner that is correct and evident. • The interpretation(s) and inference(s) completely and accurately represent the model or answers the question(s),
Generally Correct (GC)	• The student demonstrates the ability to interpret the variables, parameters, and/or other specific information given in the model. The interpretation may contain minor flaws. • The student uses the model to draw inferences about the situation being modeled in a manner that may contain some minor flaw(s). • The interpretation(s) and/or inference(s) are incomplete or inaccurate due to a minor flaw, such as a computational or copying error or mislabeling.
Partially Correct (PC)	• The student makes no appropriate attempt to interpret the variables, parameters, and/or other specific information given in the model due to major conceptual misunderstandings. • The student attempts to use the model to make the required inference(s) and/or interpretation(s) but lacks a clear understanding of how to do so. • The interpretation(s) and/or inference(s) are incomplete or inaccurate due to a major conceptual flaw.
Incorrect Solution (IC)	• The student cannot demonstrate an ability to interpret the variables, parameters, and/or other specific information given in the model. • The student cannot use the model to make the required interpretation(s) and/or inference(s). • The interpretation(s) and/or inference(s) are missing or entirely inaccurate. • The student's response does not address the question in any meaningful way

	• There is no response at all.

Learning Outcome #2: Students will demonstrate the ability to represent mathematical information symbolically, visually, numerically and verbally.

Rubric:

Level	
Completely Correct (CC)	• The student fully understands the mathematical information and employs the appropriate representation(s) to display the mathematical information. • The student correctly and accurately employs all the appropriate and required aspects of the representation to display the information. • The representation of the given information is correct and accurate. The student uses the correct format, mathematical terminology, and/or language. Variables are clearly defined, graphs are correctly labeled and scaled, and the representation is otherwise complete as required.
Generally Correct (GC)	• The student understands most of the important aspects of the mathematical information and employs the appropriate representation(s) to display the mathematical information with possibly minor flaws such as a simple misreading of the problem or copying error or mislabeling. • The student correctly and accurately employs most of the appropriate and required aspects of the representation to display the information. The representation is lacking in a minor way such as a simple misreading of the problem or copying error or mislabeling. • There is a misrepresentation of the information due to a minor computational/copying error. The student uses mostly correct format, mathematical terminology, and/or language. Variables are clearly defined, graphs are correctly labeled and scaled, but the representation is incomplete in some minor way.
Partially Correct	• The student does not fully understand the

(PC)	important aspects of the mathematical information and employs the appropriate representation(s) to display the mathematical information with major conceptual flaws. • The student shows some knowledge of how to employ most of the appropriate and required aspects of the representation to display the information. The representation is lacking in a major way. • The representation(s) show some reasonable relation to the information but contains major flaws. The student uses some correct format, mathematical terminology, and/or language. Variables are clearly defined, graphs are correctly labeled and scaled, but the representation is incomplete in some major conceptual way.
Incorrect Solution (IC)	• The student cannot represent the mathematical information in the representation(s) required. • The student completely misinterprets and/or misrepresents the information. • T he representation(s) is incomprehensible or unrelated to the given information. The process of developing the representation is entirely incorrect. • The student's response does not address the question in any meaningful way. • There is no response at all.

Learning Outcome #3: Students will demonstrate the ability to employ quantitative methods such as, arithmetic, algebra, geometry, or statistics to solve problems.

Rubric:

Level	
Completely Correct (CC)	• The student demonstrates a full understanding of the problem and/or can identify a specific numeric, algebraic, geometric, or statistical method(s) that is needed to solve the problem. • The student uses the method(s) to solve the problem. The plan for the solution is clear, logical and evident. • The solution is accurate and complete.
Generally Correct (GC)	• The student demonstrates some understanding of the problem and/or can identify the specific arithmetic, algebraic, geometric or statistical method(s) needed to solve the problem. • The student uses the method(s) to solve the problem. The plan for the solution is clear, logical and evident but is lacking in a minor way such as a simple misreading of the problem or copying error. • The solution is generally correct but may contain a minor flaw(s).
Partially Correct (PC)	• The student demonstrates only a slight understanding of the problem. The student has difficulty identifying the specific arithmetic, algebraic, geometric or statistical method(s) needed to solve the problem. • The student attempts to use a method(s) that will solve the problem, but the method itself or the implementation of it, is generally incorrect. The plan is not evident or logical. • The solution contains some correct aspects though there exists major conceptual flaw(s).
Incorrect Solution (IC)	• The student demonstrates no understanding of the problem and/or he/she cannot identify the specific arithmetic, algebraic, geometric or statistical method(s) needed to solve the problem. • The student cannot to use a method(s) that will solve the problem. Little or no work is shown that in any way relates to the correct solution of the problem • The student's response does not address the question in any meaningful way. • There is no response at all.

Learning Outcome #4: Students will demonstrate the ability to estimate and check mathematical results for reasonableness

Rubric:

Level	
Completely Correct (CC)	• The student can estimate and justify a mathematical result to a problem. • The student can articulate a justification for the estimate and the estimate has been found using a clearly defined, logical plan • The student's response is complete and accurate.
Generally Correct (GC)	• The student can estimate and justify a mathematical result to a problem but the estimate or justification contains a minor flaw such as a simple misreading of the problem or computational or copying error or mislabeling. • The student can articulate a justification for the estimate but the student's justification and/or estimate has been found was lacking in some minor way • The student's response addresses all aspects of the question but is lacking in some minor way.
Partially Correct (PC)	• The student can estimate and justify a mathematical result to a problem but the estimate or justification contains a major conceptual flaw. • The student can articulate a justification for the estimate but the student's justification and/or estimate has been found was lacking in some major conceptual way • The student's response addresses some aspect of the question correctly but is lacking in a significant way.
Incorrect Solution (IC)	• The student cannot estimate and/or justify a mathematical result to a problem. • The student's justification is not supported by any logic plan. • The student's response does not address the question in any meaningful way. • There is no response at all.

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Learning Outcome #5: Students will demonstrate the ability to recognize the limits of mathematical and statistical methods.

Rubric:

Level	
Completely Correct (CC)	• Student clearly articulates the assumptions/simplifications made in developing a mathematical/statistical model or implementing method(s) or technique(s). • Student provides an accurate description how the results from the model might differ from the real life situation it models.
Generally Correct (GC)	• Student articulates most of the assumptions/simplifications made in developing a mathematical/statistical model or implementing method(s) or technique(s) • Student provides a generally correct description of how the results from the model might differ from the real life situation it models
Partially Correct (PC)	• Student articulates only some of the assumptions/simplifications made in developing a mathematical/statistical model or implementing method(s) or technique(s). • Student indicates that the conclusions drawn from the model differ from real life but is unable to articulate the cause(s).
Incorrect Solution (IC)	• Student does not articulate any assumptions/simplifications made in developing a mathematical/statistical model or implementing method(s) or technique(s). • Student fails to realize that the results are not contextually appropriate. • There was no response at all.