

Assessment Rubric for Scientific and Quantitative Reasoning

Intended Outcome: To identify and apply mathematical and scientific principles and methods.

Criteria	4 Exemplary	3 Satisfactory	2 Beginning	1 Insufficient
Interpretation: Ability to extract quantitative information presented in various forms (e.g., equations, graphs, diagrams, tables, and/or words).	Interpretation of data contains all critical elements and relevant details, and contains no irrelevant data.	Interpretation of data contains some critical elements and some relevant details, and additional irrelevant information may be included.	Interpretation of data contains few critical elements and few relevant details, and includes irrelevant information.	Interpretation of data is absent or blatantly incorrect.
Representation: Ability to convert information from one form (e.g., equations, graphs, diagrams, tables, and/or words) into another form.	All relevant conversions are present and correct.	Some correct and relevant conversions are present, but some conversions are incorrect or not present.	Some information is converted, but it is irrelevant or incorrect.	No conversion of information is attempted.
Analysis/synthesis: Drawing conclusions based on quantitative analysis, which may involve calculation.	Uses correct and complete quantitative analysis to make relevant and correct conclusions.	Quantitative analysis is given to support a relevant conclusion, but it is either only partially correct or partially complete (e.g., there are logical errors, calculation errors, and/or unsubstantiated claims).	An incorrect quantitative analysis or major calculation error is given to support a conclusion.	Either no reasonable conclusion is made or, if present, is not based on quantitative analysis.
Evaluation: Critically evaluate the quantitative process(es) used, results obtained, and conclusions drawn.	A correct and complete explanation of evaluation process is clearly presented.	A partially correct relevant explanation is present, but incomplete or poorly represented.	A relevant explanation is present, but it is illogical, incorrect, illegible, or incoherent.	No relevant explanation is provided.

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Based on AAC&U Rubric for Quantitative Reasoning, the following suggested assignments would allow the student the best chance to meet the criteria outlined in the Scientific and Quantitative Reasoning Outcome:

- Essays, research papers, and/or abstracts with extraneous data, work problems, or applications
- Assignments that create tables, graphs, or diagrams; or select and use equations or formulas
- Assignments that use quantitative reasoning to obtain mathematical results
- Work that draws conclusions from mathematical problem solving, logic, and/or scientific methodology.