Subject Area 2 Mathematical Concepts and Quantitative Reasoning Revised Rubric and Learning Outcomes

Revised Learning Outcomes:
Upon completion of the GE Area 2 requirement, students will be able to:

2. Investigate how practitioners and scholars collect and analyze data, build mathematical models, and/or solve quantitative problems;
3. Apply quantitative reasoning skills in a variety of real-world contexts.

Course Characteristics:
In Area 2 courses, students will not just practice computational skills, but will engage in more complex mathematical work, in accordance with the CSU GE Area 2 Guidelines and Principles. Area 2 courses will have a corresponding support class for students classified as needing support. Exceptions may be made for Area 2 courses that have another Area 2 as a prerequisite, such as Calculus.

Description of Rubric: Proficiency in quantitative reasoning at the Area 2 level is demonstrated by the use of interpretation, representation, calculation, and communication of quantitative information at the college level. Area 2 courses build upon, and add depth and sophistication to, the quantitative skills that are developed by the required high school curriculum—skills that are evaluated through CSU's Multiple Measures Protocol (see p. 3 of EO 1110 FAQs) and are used to determine whether incoming freshmen across the CSU will require additional support in their Area 2 courses.

Framing Language: This rubric is used to assess established signature assignments, which are aligned to the rubric. The rubric dimensions described below are sequential in nature—a student must first interpret, then execute/calculate. Each dimension should be evaluated independently, because a student may, for example, make an error in the interpretation and/or development steps, but then correctly execute/calculate their chosen approach. Finally, communication should be demonstrated throughout the solution process, and therefore should be the last dimension assessed.

Development: Faculty Chairs from Math and Statistics and the Office of GE worked on revising the learning outcomes and rubric in Summer 2025. The original rubric was developed by faculty in the Departments of Mathematics and Statistics & Biostatistics on May 30, 2019.

	PERFORMANCE DESCRIPTORS BY LEVEL			
DIMENSION	**4**	**3**	**2**	**1**
Identification *Identify relevant information in quantitative form to select the approach to take*	Clearly identifies relevant quantitative information, resulting in selecting a valid approach.	Adequately identifies relevant quantitative information, resulting in a valid approach.	Has major errors or gaps in the identification of relevant quantitative information, resulting in a flawed approach.	Does not identify relevant quantitative information, resulting in an incorrect or inappropriate approach.
Calculation *Apply and execute their selected method to solve the quantitative problem*	Accurately applies and executes their selected method to solve the quantitative problem.	Makes some minor errors in the application and execution of their selected method to solve a quantitative problem.	Makes major errors in the application and execution of their selected method to solve a quantitative problem.	Fails to apply and execute their selected method to solve a quantitative problem.
Communication *Quantitative information used to explain, justify, and/or summarize an argument*	Effectively use quantitative information to explain, justify, and/or summarize an argument.	Adequately uses quantitative information to acceptably explain, justify, and/or summarize an argument.	Inadequately or inconsistently uses quantitative information to explain, justify, and/or summarize an argument.	Fails to use quantitative information to explain, justify, and/or summarize an argument.