**Quantitative Reasoning Rubric Cheat Sheet**

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**Faculty Name: Department:**

**Course Name & Number: Academic Year:**

**Number of Artifacts Submitted: Date Submitted:**

**Quantitative Literacy/Reasoning: Does your assignment explicitly address each of the categories below? The categories listed below will be used to score student assignments. Please confirm that your instructions address each category.**

**Overview of Quantitative Literacy/Reasoning**

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| --- | --- | --- | --- | --- |
| **Category** | **Description** | **Yes** | **No** | **Partially** |
| **1. Interpretation -** *Ability to explain information presented in mathematical forms (e.g., equations,* | Provides accurate explanations of information presented in mathematical forms.  |  |  |  |
| *graphs, diagrams, tables, words)* | Makes appropriate inferences based on that information. *For example, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future events.* |  |  |  |
| **2. Representation -** *Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)* | Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding. |  |  |  |
| **3. Calculation** | Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. |  |  |  |
|  | Calculations are also presented elegantly (clearly, concisely, etc.) |  |  |  |
| **4. Application / Analysis -** *Ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis* | Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work. |  |  |  |
| **5. Assumptions -** *Ability to make and evaluate important assumptions in estimation, modeling,* | Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate. |  |  |  |
| *and data analysis* | Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions. |  |  |  |
| **6. Communication -** *Expressing quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized)* | Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it with consistently high quality. |  |  |  |

**Definition** Quantitative Literacy (QL) – also known as Numeracy or Quantitative Reasoning (QR) – is a "habit of mind," competency, and comfort in working with numerical data. Individuals with strong QL skills possess the ability to reason and solve quantitative problems from a wide array of authentic contexts and everyday life situations. They understand and can create sophisticated arguments supported by quantitative evidence and they can clearly communicate those arguments in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

**Full Rubric - Quantitative Literacy/Reasoning**

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|  | **Capstone -** 4 | **3 Milestones 2** | **Benchmark -** 1 |
| **Interpretation***Ability to explain information presented in mathematical forms (e.g., equations, graphs, diagrams, tables, words)* | Provides accurate explanations of information presented in mathematical forms. Makes appropriate inferences based on that information. *For example, accurately explains the trend data shown in a graph and makes reasonable predictions regarding what the data suggest about future events.* | Provides accurate explanations of information presented in mathematical forms. *For instance, accurately explains the trend data shown in a graph.* | Provides somewhat accurate explanations of information presented in mathematical forms, but occasionally makes minor errors related to computations or units. *For instance, accurately explains trend data shown in a graph, but may miscalculate the slope of the trend line.* | Attempts to explain information presented in mathematical forms, but draws incorrect conclusions about what the information means. *For example, attempts to explain the trend data shown in a graph, but will frequently misinterpret the nature of that trend, perhaps by confusing positive and negative trends.* |
| **Representation***Ability to convert relevant information into various mathematical forms (e.g., equations, graphs, diagrams, tables, words)* | Skillfully converts relevant information into an insightful mathematical portrayal in a way that contributes to a further or deeper understanding. | Competently converts relevant information into an appropriate and desired mathematical portrayal. | Completes conversion of information but resulting mathematical portrayal is only partially appropriate or accurate. | Completes conversion of information but resulting mathematical portrayal is inappropriate or inaccurate. |
| **Calculation** | Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. Calculations are also presented elegantly (clearly, concisely, etc.) | Calculations attempted are essentially all successful and sufficiently comprehensive to solve the problem. | Calculations attempted are either unsuccessful orrepresent only a portion of the calculations required to comprehensively solve the problem. ﻿ | Calculations are attempted but are both unsuccessful and are not comprehensive. |

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|  | **Capstone -** 4 | **3 Milestones 2** | **Benchmark -** 1 |
| **Application / Analysis***Ability to make judgments and draw appropriate conclusions based on the quantitative analysis of data, while recognizing the limits of this analysis* | Uses the quantitative analysis of data as the basis for deep and thoughtful judgments, drawing insightful, carefully qualified conclusions from this work. | Uses the quantitative analysis of data as the basis for competent judgments, drawing reasonable and appropriately qualified conclusions from this work. | Uses the quantitative analysis of data as the basis for workmanlike (without inspiration or nuance, ordinary) judgments, drawing plausible conclusions from this work. | Uses the quantitative analysis of data as the basis for tentative, basic judgments, although is hesitant or uncertain about drawing conclusions from this work. |
| **Assumptions***Ability to make and evaluate important assumptions in estimation, modeling, and data analysis* | Explicitly describes assumptions and provides compelling rationale for why each assumption is appropriate. Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions. | Explicitly describes assumptions and provides compelling rationale for why assumptions are appropriate. | Explicitly describes assumptions. | Attempts to describe assumptions. |
| **Communication***Expressing quantitative evidence in support of the argument or purpose of the work (in terms of what evidence is used and how it is formatted, presented, and contextualized)* | Uses quantitative information in connection with the argument or purpose of the work, presents it in an effective format, and explicates it with consistently high quality. | Uses quantitative information in connection with the argument or purpose of the work, though data may be presented in a less than completely effective format or some parts of the explication may be uneven. | Uses quantitative information, but does not effectively connect it to the argument or purpose of the work. | Presents an argument for which quantitative evidence is pertinent, but does not provide adequate explicit numerical support. (May use quasi-quantitative words such as "many," "few," "increasing," "small," and the like in place of actual quantities.) |