# Essential Skill: Quantitative Reasoning

This rubric was created using the *NMHED Essential Skill Rubrics* and the Association of American Colleges and Universities (AAC&U) *Written Communication VALUE Rubric*.

Retrieved from <https://www.aacu.org/value-rubrics>

Quantitative reasoning is the representation and communication of quantitative information, the analysis and formulation of quantitative arguments, and the solving of quantitative contextual problems. Contextual problems are “word problems” situated within a context relevant to the course content (e.g. economics, psychology, chemistry) or otherwise accessible to students. They may model aspects of real-world problems while maintaining an appropriate level of complexity for general education students.

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| **Dimension** | **0 = No Evidence** | **1 = Emerging** | **2 = Developing** | **3 = Proficient** |
| **Communication and/or Representation of Quantitative Information:** Express quantitative information symbolically, graphically, and in written or oral language. | No explanation of numbers, graphics or algebraic symbols is given. | The meaning of graphics, numbers, or algebraic symbols within a given context is explained. | As well as explaining them, the ability to translate mathematical graphics, and/or symbolism into written or oral language is demonstrated OR the translation of written or oral language to mathematical graphics, and/or symbols is demonstrated.  | Following from an ability to explain and/or translate them, the ability to integrate written and symbolic mathematical constructs in describing particular contexts is demonstrated. |
| **Analysis of Quantitative Arguments:** Interpret, analyze and critique information or a line of reasoning presented by others. | There is no evidence of interpretation, analysis, or critique of quantitative arguments. | The ability to summarize quantitative arguments presented by others is evident. | As well as being able to summarize them, the ability to interpret, analyze, and compare the conclusions of a quantitative argument with conclusions from other reliable sources is evident. | Along with summarizing, interpreting, and analyzing, the ability to use appropriate techniques of mathematical proof or statistical analysis to critique quantitative arguments for mathematical validity is evident.  |
| **Application of Quantitative Models:** Apply appropriate quantitative models to real-world or other contextual problems. | No application of quantitative models is evident. | The ability to apply quantitative information needed to address contextual problems is evident. | In addition to the application of quantitative information, the ability to identify appropriate mathematical or statistical models to represent quantitative information in contextual problems is evident. | In addition to applying appropriate models for representing quantitative information: the ability to assess the validity of numeric predictions and unreasonable findings; to analyze and interpret results; and/or to use them in a quantitative argument is evident. |

**Student Artifact Guidelines:**