

QUANTITATIVE REASONING (QURE) RUBRIC

Definition: Students communicate mathematical principles and apply them to follow an extended line of formal reasoning and critical thinking. Students read and identify mathematical information that is relevant in a problem; interpret and critically analyze mathematical information presented; select appropriate methods and solve problems, estimating and evaluating the validity of results and effectively communicating quantitative concepts using correct mathematical syntax.

General Education Measures (GEMs)	Proficient	Not Proficient	Did Not Submit	Not Applicable
<p>QURE 1: Communicate mathematical principles and apply them to follow an extended line of formal reasoning and critical thinking</p>	<ol style="list-style-type: none"> 1. The student can correctly explain an extended deductive line of reasoning appropriate to the course. 2. The student can create and form an extended line of deductive reasoning. 3. Student can identify flaws in an incorrect line of reasoning. 	<ol style="list-style-type: none"> 1. The student cannot correctly explain an extended deductive line of reasoning appropriate to the course. 2. The student cannot create and form an extended line of deductive reasoning. 3. Student cannot identify flaws in an incorrect line of reasoning. 	<p>Student did not submit the assignment.</p>	<p>QURE1 is not assessed in this course.</p>
<p>QURE 2: Read and identify mathematical information that is relevant in a problem</p>	<ol style="list-style-type: none"> 1. Student can extract relevant information needed to solve a problem. 2. Student can recognize and interpret mathematical symbols and terms. 	<ol style="list-style-type: none"> 1. Student cannot extract relevant information needed to solve a problem. 2. Student cannot recognize and interpret mathematical symbols and terms. 	<p>Student did not submit the assignment.</p>	<p>QURE 2 is not assessed in this course.</p>

<p>QURE 3: Interpret and critically analyze mathematical information presented; select appropriate methods and solve problems, estimating and evaluating the validity of results</p>	<ol style="list-style-type: none"> 1. Student can correctly select the appropriate method to solve a problem or prove a statement. 2. Student can correctly apply mathematical procedures, techniques, and theory to a problem. 3. Student can check and verify that a final answer makes mathematical sense and answers the original question. 	<ol style="list-style-type: none"> 1. Student cannot correctly select the appropriate method to solve a problem or prove a statement. 2. Student cannot correctly apply mathematical procedures, techniques, and theory to a problem. 3. Student cannot check and verify that a final answer makes mathematical sense and answers the original question. 	<p>Student did not submit the assignment.</p>	<p>QURE 3 is not assessed in this course.</p>
<p>QURE 4: Effectively communicate quantitative concepts using correct mathematical syntax</p>	<ol style="list-style-type: none"> 1. Student can present and articulate a variety of complex concepts and results in a logical and comprehensive manner. 2. Student can present work in a mathematically correct form. 3. Student can communicate 	<ol style="list-style-type: none"> 1. Student cannot present and articulate a variety of complex concepts and results in a logical and comprehensive manner. 2. Student cannot present work in a mathematically correct form. 	<p>Student did not submit the assignment.</p>	<p>QURE 4 is not assessed in this course.</p>

	mathematical principles or information using appropriate charts and diagrams.	3. Student cannot communicate mathematical principles or information using appropriate charts and diagrams.		
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Glossary

The definitions that follow were developed to clarify terms and concepts in this rubric only.

- **Critical thinking:** A habit of mind characterized by the comprehensive exploration of issues, ideas, artifacts, and events before accepting or formulating an opinion or conclusion. (from AACU Critical Thinking VALUE rubric)
- **Formal reasoning:** A form of deductive reasoning that is concerned with deriving valid conclusions or evaluating the validity of conclusions based on a set of assumed-true premises, using the rules of logic and mathematical models.
- **Mathematical information:** The concepts, procedures, facts, symbols, and tools used to quantitatively and/or logically describe, explain, or predict phenomena. (derived from <https://www.ncbi.nlm.nih.gov/books/NBK396094/>)
- **Mathematical syntax:** the set of rules that defines the meaning and validity of strings of mathematical symbols.

This rubric was adapted from the Association of American Colleges and Universities (AAC&U) VALUE rubrics.