Description: Quantitative Reasoning (QR) is competency and comfort in working with numerical data. It involves understanding and applying mathematics/statistics to analyze and interpret real-world quantitative information in a disciplinary context. Individuals with strong QR skills possess the ability to reason about and solve quantitative problems from a wide array of contexts. They understand and can create sophisticated arguments and conclusions supported by quantitative evidence and can clearly communicate those in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate).

<table>
<thead>
<tr>
<th>Problem Formulation</th>
<th>4</th>
<th>3</th>
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<tbody>
<tr>
<td>Translation of the disciplinary/real-world problem into a QR context (e.g., writing a hypothesis, a math model, quantitative instrumentation). Use and interpretation of quantitative data/information to identify or formulate a problem.</td>
<td>Formulation of the problem is comprehensive and placed in an appropriate quantitative context.</td>
<td>Formulation of the problem is adequate and placed in an appropriate quantitative context.</td>
<td>Formulation of the problem is limited; explanation of the context is somewhat incorrect or incomplete.</td>
<td>Formulation of the problem is incorrect or missing; explanation of the context is incorrect or incomplete.</td>
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<thead>
<tr>
<th>Representation/Visualization</th>
<th>4</th>
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<tbody>
<tr>
<td>Depiction of quantitative information such as visual (e.g., figures, charts, tables, equations) and non-visual (e.g., audio, ADA accessible).</td>
<td>Accurate and appropriate display of quantitative information using academic vocabulary with correct symbols, units, scale, etc.</td>
<td>Mostly accurate and appropriate display of quantitative information. May contain minor errors in academic vocabulary, symbols, units, scale, etc.</td>
<td>Somewhat accurate and/or appropriate display of quantitative information. May contain major errors in academic vocabulary, symbols, units, scale, etc.</td>
<td>Inaccurate, inappropriate, or missing display of quantitative information. May contain major errors in academic vocabulary, symbols, units, scale, etc.</td>
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<thead>
<tr>
<th>Quantitative Analysis</th>
<th>4</th>
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<tbody>
<tr>
<td>Selection and use of analytical methods (e.g., data analysis, solution technique).</td>
<td>Appropriate and accurate selection and use of analytic methods.</td>
<td>Mostly appropriate and accurate selection and use of analytic methods.</td>
<td>Somewhat appropriate and/or somewhat accurate selection and use of analytic methods.</td>
<td>Inappropriate and inaccurate selection and use of analytic methods.</td>
</tr>
<tr>
<td><strong>Interpretation</strong></td>
<td>Appropriate and comprehensive explanation of the results obtained from the quantitative analysis in the context of the original problem.</td>
<td>Mostly appropriate explanation of the results obtained from the quantitative analysis in the context of the original problem.</td>
<td>Somewhat appropriate explanation of the results obtained from the quantitative analysis. Explanation of the context is somewhat incorrect or incomplete.</td>
<td>Inappropriate, inadequate, or missing explanation of the results obtained from the quantitative analysis. Explanation of the context is incorrect or incomplete.</td>
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<td><strong>Implications</strong></td>
<td>Clearly identifies and explains substantive potential applications of the results and their broader impacts.</td>
<td>Adequately identifies and explains substantive potential applications of the results and their broader impacts.</td>
<td>Unclear or limited explanation of substantive potential applications of the results and their broader impacts.</td>
<td>Inappropriate or missing explanation of substantive potential applications of the results and their broader impacts.</td>
</tr>
<tr>
<td><strong>Limitations</strong></td>
<td>Accurate and thorough articulation of deficiencies with the underlying data, analyses or conclusions.</td>
<td>Mostly accurate and/or mostly thorough articulation of deficiencies with the underlying data, analyses or conclusions.</td>
<td>Somewhat inaccurate and/or limited articulation of deficiencies with the underlying data, analyses or conclusions.</td>
<td>Inaccurate or missing articulation of deficiencies with the underlying data, analyses or conclusions.</td>
</tr>
<tr>
<td><strong>Overall Communication</strong></td>
<td>Consistently clear and logical presentation throughout, using appropriate academic language.</td>
<td>Mostly clear and logical presentation; generally uses appropriate academic language.</td>
<td>Somewhat unclear or illogical presentation; may fail to use appropriate academic language.</td>
<td>Unclear or illogical presentation; fails to use appropriate academic language.</td>
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</tbody>
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