



Empirical & Quantitative Reasoning Skills Outcome: Palo Alto College students apply scientific and mathematical concepts to analyze and solve problems.

Criteria	Excellent (5)	Good (4)	Average (3)	Marginal (2)	Poor (1)+	NP
<p>Identification – The extent to which the understanding of the nature of the inquiry and the desired outcome(s) of analysis is indicated. Identification clearly pinpoints what information is being sought and what kind of analysis is required. <i>(Does the student understand the problem and what is being asked?)</i></p>	The purpose, components, and variables of the investigation/project are clearly identified .	The purpose, components, and variables of the investigation/project are identified .	The purpose, components, and variables of the investigation/project are mostly identified .	The purpose, components, and variables of the investigation/project are somewhat identified .	The purpose, components, and variables of the investigation/project are not identified .	Outcome not present in artifact.
<p>Assimilation – The extent to which the information required for analysis is assimilated and identified. Assimilation reflects whether all necessary information is presented and used, whether the organization is logical, and whether any outside information should be integrated into the current assignment. <i>(Does the student set-up the problem accurately?)</i></p>	The information that is required for an analysis of all investigative components is clearly evident . If applicable, values are correctly translated into variables and all necessary formulas are present.	The information that is required for an analysis of all investigative components is evident . If applicable, most values are correctly translated into variables and necessary formulas are present.	The information that is required for an analysis of all investigative components is mostly evident . If applicable, some values are correctly translated into variables and most necessary formulas are present.	The information that is required for an analysis of all investigative components is somewhat evident . If applicable, values are incorrectly translated into variables and some necessary formulas are present.	The information that is required for an analysis of all investigative components is not evident . If applicable, values are incorrectly translated into variables and no necessary formulas are present.	Outcome not present in artifact.
<p>Analysis – The relevance of the steps taken toward achieving the desired outcomes, the logic and clarity within</p>	All investigative or quantitative components are methodically scrutinized. The steps	All investigative or quantitative components are scrutinized . The steps followed are logical and	All investigative or quantitative components are somewhat scrutinized . The steps followed are	Some investigative or quantitative components are scrutinized. Some steps followed are somewhat	Most investigative or quantitative components are not scrutinized . The steps followed are illogical	Outcome not present in artifact.



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the presented methods, and the consistency and accuracy of the presented information. <i>(Are the steps (process)/properties accurately being used?)</i>	followed are logical and relevant to the desired result. The proper tools/technology were used and well integrated into the final product. Any notation is consistent and well defined.	relevant to the desired result. The proper tools/technology were used and mostly integrated into the final product. Any notation is consistent and well defined.	mostly logical and relevant to the desired result. The proper tools/technology were mostly used and somewhat integrated into the final product. Any notation is mostly consistent and well defined.	logical and relevant to the desired result. The proper tools/technology were somewhat used , but not integrated into the final product. Any notation is somewhat consistent but not defined .	and/or irrelevant to the desired result. The proper tools/technology were not used and/or integrated into the final product. Any notation is not consistent and not defined .	
Presentation – The point at which a clear conclusion and/or supplemental materials (e.g. graphs, pictures, etc.) are presented. <i>(Is the process well organized, logical (easy to follow) and in good detail?)</i>	A concise summary of the analysis is presented. The presented information is correct, of high quality , and the terminology/figures are accurate and easy to understand. All visual representations of evidence are well-scaled and well represent the analysis findings.	A good summary of the analysis is presented. The presented information is correct, of good quality , and the terminology/figures are accurate and easy to understand. Most visual representations of evidence are well-scaled and/or well represent the analysis findings.	A summary of the analysis is presented. The presented information is mostly correct, of good quality , and the terminology/figures are mostly accurate and easy to understand. Most visual representations of evidence are acceptably scaled and represent the analysis findings.	A partial summary of the analysis is presented. The presented information is somewhat correct, of adequate quality , and the terminology/figures are somewhat accurate and relatively easy to understand. Some visual representations of evidence are acceptably scaled and represent the analysis findings.	A summary of the analysis is either inadequately presented or not presented at all. The presented information is mostly incorrect , and/or of poor quality , and/or the terminology/figures are inaccurate and/or hard to understand . Few or no visual representations of evidence are acceptably scaled or represent the analysis findings.	Outcome not present in artifact.
Application – The extent to which the results of analysis are applied to answer or address the hypothesis or problem. <i>(Is the answer correct? Does it make sense? Is it a reasonable solution?)</i>	The coherent integration of all steps of the investigation lead to an accurate, complete, relevant conclusion that is relative to the initial investigative statement.	The coherent integration of all steps of the investigation lead to an accurate, mostly complete, relevant conclusion that is relative to the initial investigative statement.	The coherent integration of most steps of the investigation lead to an accurate, mostly complete , acceptable conclusion that is relative to the initial investigative statement.	The integration of most steps of the investigation lead to a somewhat accurate, partially complete conclusion that is relative to the initial investigative statement.	The integration does not include all steps of the investigation and does not lead to an accurate, nor complete conclusion that relates to the initial investigative argument.	Outcome not present in artifact.