

Montgomery College General Education Assessment Rubric: Quantitative Reasoning

Montgomery College's Scientific and Quantitative Reasoning Rubric is based on the Scientific Method of Inquiry, Advancing Assessment of Quantitative and Scientific Reasoning, Numeracy, 3 (2): Article 2 by Sundre, Donna L. and Amy D. Theik. 2010, and adapted from the College of Marin Common Scientific and Quantitative Reasoning Rubric, and the Association of American Colleges and Universities' Quantitative Literacy VALUE Rubric.

Quantitative Reasoning includes the ability to interpret and represent data; perform mathematical calculations and carry out an analysis with clear assumptions; and finally communicate results appropriately.

Standard 1 Interpretation And Representation: The student is able to interpret and represent mathematically the data provided.				
Advanced (3)	Proficient (2)	Novice (1)	Not Evident (0)	Not Applicable
<ul style="list-style-type: none"> <input type="checkbox"/> Provides accurate explanations of information presented in mathematical form. <input type="checkbox"/> Makes appropriate inferences based on that information. <input type="checkbox"/> Converts relevant information into an insightful mathematical portrayal in a way that contributes to a further and deeper understanding. 	<ul style="list-style-type: none"> <input type="checkbox"/> Provides mostly accurate explanations of information presented in mathematical form. <input type="checkbox"/> Makes mostly appropriate inferences based on that information. <input type="checkbox"/> Mostly converts relevant information into an insightful mathematical portrayal in a way that contributes to a further and deeper understanding. 	<ul style="list-style-type: none"> <input type="checkbox"/> Provides inaccurate explanations of information presented in mathematical form. <input type="checkbox"/> Does not makes appropriate inferences based on that information. <input type="checkbox"/> Does not convert relevant information into an insightful mathematical portrayal in a way that contributes to a further and deeper understanding. 	<ul style="list-style-type: none"> <input type="checkbox"/> Does not provide explanations of information presented in mathematical form. <input type="checkbox"/> Does not make appropriate inferences based on that information. <input type="checkbox"/> Does not convert relevant information into an insightful mathematical portrayal in a way that contributes to a further and deeper understanding. 	<ul style="list-style-type: none"> <input type="checkbox"/> Assessment task does not reflect these characteristics for student performance

Standard 2 Calculation, Analysis and Assumptions: The student is able to perform mathematical calculations and perform an analysis with clear assumptions				
Advanced (3)	Proficient (2)	Novice (1)	Not Evident (0)	Not Applicable
<ul style="list-style-type: none"> <input type="checkbox"/> Performs accurate calculations which are sufficiently comprehensive to solve the problem. <input type="checkbox"/> Uses correct and complete quantitative analysis. <input type="checkbox"/> Makes relevant and correct conclusions. <input type="checkbox"/> Explicitly describes assumptions and provides rationale for why each assumption is appropriate. <input type="checkbox"/> Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions. 	<ul style="list-style-type: none"> <input type="checkbox"/> Performs mostly accurate calculations which are sufficiently comprehensive to solve the problem. <input type="checkbox"/> Uses mostly correct and complete quantitative analysis. <input type="checkbox"/> Makes mostly relevant and correct conclusions. <input type="checkbox"/> Somewhat explicitly describes assumptions and provides rationale for why each assumption is appropriate. <input type="checkbox"/> Mostly Shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions. 	<ul style="list-style-type: none"> <input type="checkbox"/> Performs inaccurate calculations which are insufficiently comprehensive to solve the problem. <input type="checkbox"/> Uses incorrect and complete quantitative analysis. <input type="checkbox"/> Make irrelevant and correct conclusions. <input type="checkbox"/> Vaguely describe assumptions and provides rationale for why each assumption is appropriate. <input type="checkbox"/> Shows minimal awareness that confidence in final conclusions is limited by the accuracy of the assumptions. 	<ul style="list-style-type: none"> <input type="checkbox"/> Does not perform accurate calculations. <input type="checkbox"/> Does not uses correct and complete quantitative analysis. <input type="checkbox"/> Does not make relevant and correct conclusions. <input type="checkbox"/> Does not explicitly describe assumptions and provides rationale for why each assumption is appropriate. <input type="checkbox"/> Does not shows awareness that confidence in final conclusions is limited by the accuracy of the assumptions. 	<ul style="list-style-type: none"> <input type="checkbox"/> Assessment task does not reflect these characteristics for student performance

Standard 3 Communication: The student is able to communicate results appropriately.
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Advanced (3)	Proficient (2)	Novice (1)	Not Evident (0)	Not Applicable
<ul style="list-style-type: none"> <input type="checkbox"/> Presents work in an effective format, and explicates it with high quality. <input type="checkbox"/> Uses quantitative information in connection with the argument or purpose of the work 	<ul style="list-style-type: none"> <input type="checkbox"/> Mostly presents work in an effective format, and explicates it with high quality. <input type="checkbox"/> Mostly uses quantitative information in connection with the argument or purpose of the work. 	<ul style="list-style-type: none"> <input type="checkbox"/> Ineffectively presents work, and mostly below standard quality. <input type="checkbox"/> Rarely uses quantitative information in connection with the argument or purpose of the work. 	<ul style="list-style-type: none"> <input type="checkbox"/> Does not present work in an effective format, and explicates it with high quality. <input type="checkbox"/> Does not use quantitative information in connection with the argument or purpose of the work. 	<ul style="list-style-type: none"> <input type="checkbox"/> Assessment task does not reflect these characteristics for student performance