

## B. MATHEMATICS

Competency: Demonstrate mathematical literacy through solving problems, communicating concepts, reasoning mathematically, and applying mathematical or statistical methods, using multiple representations where applicable.

Type of Artifact	1 (Minimal)	2 (Developing)	3 (Substantial)	4 (Complete)
Individual Assignment	Demonstrates math concepts that are not college-level (i.e., basic graphs, basic algebra, etc.) OR Provides an artifact from a college level math course with no work shown (i.e., exam that is only multiple choice)	Demonstrates basic college-level math concepts with explanation (i.e., any evidence from an introductory math course showing development toward higher level thinking)	Provides clear communication for medium to upper level math concepts (math reasoning may be shown by software calculations or hand calculation)	Demonstrates upper level analytical reasoning with work and complete explanations OR Provides research paper authored by student (and possibly faculty) showing upper level math concepts with sources cited.
Group Assignment	Provides group work with below college-level math (with explanation of student's participation in project)	Provides group work that demonstrates college level math skills at minimal level (with explanations of student's participation in project)	Provides group project that demonstrates college level math reasoning, research provided, and sources cited	Demonstrates exemplary group work.

### Examples of Competency Score for Mathematics

Score of 1 (Minimal)	<ul style="list-style-type: none"> <li>• Blank Documents (would like to give a 0)</li> <li>• Algebra or arithmetic calculations without interpretation</li> <li>• Statistics calculations or analysis without interpretation</li> <li>• Basic graphs or tables with/without labels and interpretation</li> <li>• Substituting numbers into a simple formula without explanation</li> </ul> <p>Example of Artifact:</p> <ul style="list-style-type: none"> <li>• Calculating loan payments without interpretation</li> <li>• Calculating test statistics without interpretation</li> </ul>
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<p>Score of 2 (Developing)</p>	<ul style="list-style-type: none"> <li>• Algebra or arithmetic calculations with labeling and fully developed interpretations</li> <li>• Introductory Statistics calculation or analysis with properly developed interpretations</li> <li>• Complex graphs with labels and interpretation</li> <li>• Calculating values using arithmetic or formulas and fully interpreting those values in context of a problem</li> </ul> <p>Example of Artifact:</p> <ul style="list-style-type: none"> <li>• Calculating loan payments while fully interpreting the pros and cons of those loan payments for a given situation</li> <li>• Calculating test statistics while interpreting the implications of that test statistic on a particular hypothesis test</li> </ul> <p>(Excellent artifacts from MATH 1060, 1070, 1080, 2070 and STAT 3090 will score a 2) (Superior artifacts from MATH 1010, 1020, 1150, 1160, 2160 and STAT 2220, 2300 will score at most a 2)</p>
<p>Score of 3 (Substantial)</p>	<ul style="list-style-type: none"> <li>• Intermediate Statistics Analysis with properly developed interpretations</li> <li>• Fully developed intermediate Calculus problem with interpretation in context of a problem</li> </ul> <p>Example of Artifact:</p> <ul style="list-style-type: none"> <li>• Statistical Analysis with ideas and thoughts beyond scope of course</li> <li>• Multiple Regression Analysis in context of a problem</li> <li>• Analysis of Variance Analysis in context of a problem</li> <li>• Optimization problem interpreted in context of a problem</li> </ul> <p>(Excellent artifacts from STAT 3300 will score a 3) (Superior artifacts from MATH 1060, 1070, 1080, 2070 and STAT 3090 will score at most a 3)</p>
<p>Score of 4 (Complete)</p>	<ul style="list-style-type: none"> <li>• Advanced Statistical analysis of complex problem with interpretation</li> <li>• Research paper authored by student</li> <li>• Upper level mathematical proofs with explanation</li> </ul> <p>(Superior artifact from STAT 3300 may score a 4)</p>