

THE EXAMPLE OF PROBLEM SOLVING IN MATHEMATICS

All students must submit evidence of problem solving in mathematics as part of the Graduation Portfolio. The project/demonstration must meet the standards as given in the Rubric for evaluation which follows.

Please refer to the rubric in developing your experiment.

APPLICATION HIGHEST LEVEL OF MATH ATTAINMENT

Performance Indicators	Outstanding	Good	Competent	Needs Revision
Fluency in basic and advanced skills	Efficiently and effectively carries out advanced and mathematical procedures including several selections from advanced algebra, advanced geometry, calculus, logic probability, statistics, and trigonometry Effectively uses technological aids such as tools for measurement, computers, and calculators	Effectively carries out advanced mathematical procedures including some selections from advanced algebra, advanced geometry, calculus, logic, probability, statistics and trigonometry Effectively uses technological aids such as tools of measurement, computers, and calculators	Carries out advanced mathematical procedures with minor inaccuracies Or Effectively and efficiently carries out basic algebraic and geometric procedures Effectively uses technological aids such as tools of measurement, computers, and calculators	Unable to effectively carry out basic algebraic and geometric procedures Does not use technological aids effectively
Mathematical modeling and data analysis	Explains the context of the problem/situation being modeled and formulates the problem or task Develops relevant theories and assumptions for each model Develops multiple models using geometric or graphical representations algebraic tools and /or tables and explains the theory behind each model Analyzes each model using clear criteria and modifies accordingly Demonstrates how the model can be applied to make predictions and discusses possible errors	Formulates the problem or task and demonstrates an understanding of the problems States relevant assumptions for each model Designs at least two models using graphical representations, algebraic tools and/or tables, and explains the theory behind each model Analyzes each model and modifies the work accordingly Demonstrates how the model can be applied to make predictions	Formulates the problem or task Develops one reasonable model using graphical representations, algebraic tools and/or tables and explains the mathematics behind each Explains how the model relates to the problem or situation being Demonstrates how the model can be applied to make predictions	Unable to accurately formulate the problem or task Unable to develop reasonable model Does not explain how the model relates to the problem or situation Does not show how the model can be used to make predictions
Problem Solving and Reasoning	Plans, implements and solves non-routine problems through the use of multiple strategies Evaluates solutions critically Shows sophisticated, elegant, and direct mathematical reasoning and draws valid conclusions through analysis Constructs, interprets, and uses one or more generalizations Analyzes methodology	Plans, implements, and solves non-routine problems through the use of two strategies Evaluates solutions critically Shows substantial mathematical reasoning and draws valid conclusions through analysis Constructs and interprets a generalization Thoroughly reflects on methodology	Plans, implements, and solves non-routine problems through the use of one strategy Evaluates solution Uses appropriate mathematical reasoning to draw a valid conclusion Constructs a generalization	Unable to plan and solve non-routine problem Does not evaluate solutions Does not use mathematical reasoning to draw conclusions Does not construct a generalization
Communication				Does not reflect on methodology