



**gtPATHWAYS COMPETENCY: PROBLEM SOLVING**  
Required in gtPathways Categories: MA1, MA2, MA3, MA4, SC1? & SC2?

***Criteria for Problem Solving***

Competency in problem solving represents a student's ability to design, evaluate, and implement a strategy to answer an open-ended question or achieve a desired goal.

***Student Learning Outcomes (students should be able to...):***

Define a Problem

- Construct a detailed and comprehensive problem statement
- Identify relevant contextual factors related to the problem

Propose a Strategy

- Propose a strategy that demonstrates understanding of a problem
- Consider contextual factors when identifying approaches to solving a problem
- Identify approaches to solving a problem within a given context

Evaluate Potential Strategy

- Provide an evaluation of the potential strategy(ies) which may include:
  - the **history of the problem**,
  - the logic behind the potential strategy(ies),
  - the feasibility of the proposed strategy(ies) and
  - the potential impacts of the proposed strategy(ies)

Apply Procedures to Strategy(ies) Process

- Use identified approach(s) for solving the problem within a specific context (situation).

Evaluate Results of Strategy(ies)

- Discuss and review results relative to factors identified in the problem statement.
- Make recommendations for further work (where applicable).

**Comment [IKM1]:** Math faculty asked, "What does this mean? Could more info be added to help explain?"





**PROBLEM SOLVING RUBRIC**

*This rubric is meant to be an **optional** course design and assessment tool. Evaluators are encouraged to assign a zero to any work sample or collection of work that does not meet not meet level one performance criteria.*

	4	3	2	1
<b>Define a Problem</b>	Demonstrates the ability to construct a detailed problem statement that identifies all relevant contextual (situational) factors.	Demonstrates the ability to construct a clear problem statement that identifies most relevant contextual (situational) factors.	An attempt at a problem statement is evident but it lacks depth and only some relevant (situational) factors are identified.	Demonstrates a limited ability in identifying a problem statement or related contextual (situational) factors.
<b>Propose a (Math) Strategy</b>	Proposes one or more strategies that indicate a deep comprehension of the problem. Solution strategies address all contextual (situational) factors as identified in the problem statement.	Proposes one or more strategies that indicate comprehension of the problem. Solution strategies address some of the contextual (situational) factors identified in the problem statement.	Proposes one strategy that indicates a vague understanding of the problem. Strategy indirectly addresses the problem statement.	Proposes a strategy that is difficult to evaluate because it is vague or only indirectly addresses the problem statement.
<b>Evaluate Potential Solution(s) Strategy</b>	Evaluation of solution(s) contains a thorough and insightful explanation. Considers the following as deemed appropriate by the context: history of problem, reviews logic/ reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solution(s) contains a thorough explanation. Considers the following as deemed appropriate by the context: history of problem, review of logic/ reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solution(s) contains a reasonable explanation but lacks depth. Considers the following as deemed appropriate by the context: history of problem, review of logic/ reasoning, examines feasibility of solution, and weighs impacts of solution.	Evaluation of solution(s) contains a cursory, surface level explanation. Considers the following as deemed appropriate by the context: history of problem, review of logic/ reasoning, examines feasibility of solution, and weighs impacts of solution.

**Comment [IKM2]:** Delete this if competency will be used for Social and Behavioral Sciences



	4	3	2	1
<b>Apply procedures throughout the Solution Process</b>	Completely applies appropriate and efficient (streamlined) procedures and/or strategies throughout the solution process within a specific context (situation).	Applies procedures and/or strategies for the problem with minor errors or unnecessary steps through the solution process within a specific context (situation).	Applies procedures and/or strategies for the problem with multiple minor errors or a major error through the solution process within a specific context (situation).	Applies procedures and/or strategies for the problem with major errors through the solution process within a specific context (situation).
<b>Evaluate Results of Solution</b>	Results are thoroughly discussed and reviewed relative to the problem statement.  Detailed consideration of the need for further work is identified (where applicable).	Results are identified and reviewed relative to the problem statement.  Some consideration of the need for further work is identified (where applicable).	Results are identified but review lacks depth.  Little consideration of the need for further work is identified (where applicable).	Results are identified but review is cursory and superficial.  No consideration of the need for further work is included (where applicable).

This rubric was adapted from the Association of American Colleges and Universities (AAC&U) VALUE rubrics and is also aligned with the Interstate Passport Initiative Learning Outcomes. The original VALUE rubrics may be accessed at <http://www.aacu.org/value-rubrics>. The Interstate Passport Initiative Learning Outcomes can be accessed at <http://www.wiche.edu/passport/learningOutcomesCriteria>.