



gtPATHWAYS COMPETENCY: PROBLEM SOLVING

Required in gtPathways Categories: MA1

Math is not making this competency required but is revising it for potential future use.

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...):

1. Define a Problem
 - a) Construct a detailed and comprehensive problem statement or clearly describe the goal
 - b) Identify relevant contextual factors ~~related to the problem~~
2. Propose a Strategy
 - a) ~~Propose a strategy that demonstrates understanding of a problem~~
 - b) ~~Consider contextual factors when identifying approaches to solving a problem~~
 - e)a) Identify reasonable approaches to solving a the problem within a the given context
3. Evaluate Potential Strategies
 - a) Provide an evaluation of the potential strategy(ies) which may include:
 - i. the history of the problem,
 - ii. the logic behind the potential strategy(ies),
 - iii. the feasibility of the proposed strategy(ies) and
 - iv. the potential impacts of the proposed strategy(ies)
 - b) Choose a feasible strategy
4. Apply ~~Procedures to a Strategy(ies)(ies) Process~~
 - a) Implement ~~identified~~ chosen approach(es)
 - b) Gauge success of the chosen strategy(ies) ~~for solving~~

~~within a specific context (situation).~~

5. Evaluate Results ~~of Strategy(ies)~~





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



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
Define a Problem	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.
Propose a Strategy	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.
Evaluate Potential Strategies	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.



	4	3	2	1
Apply a Strategy	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). *Student work demonstrates no need for multiple attempts for approaches to solution of problem to gauge success of strategy*	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). *Student work demonstrates multiple attempts for approaches to solution of problem to gauge success of strategy*	Applies procedures and/or strategies for the problem with major errors through the solution process within a specific context (situation). *Student work demonstrates multiple attempts for approaches to solution of problem to gauge success of strategy*
Evaluate Results	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>.