	4	3	2	1	0	NA (Prob)	NA (Solver)
Physics Approach	The solver has explicitly stated an appropriate and complete physics approach.	The overall solution indicates one basic physics concept or principle of the approach is missing or inappropriate.	The overall solution indicates more than one basic physics concept or principle of the approach is missing or inappropriate.	The overall solution indicates a fundamental misunder-standing of physics concepts or principles for the chosen approach.	The solution does not indicate a basic physics approach, and it is necessary for this problem / student.	A physics approach is not necessary for this <u>problem</u>. (i.e., has already been stated in the problem or textbook heading)	An explicit physics approach is not necessary for this <u>solver</u>, as indicated by the overall solution process.
Useful Description*	The solution includes an appropriate and useful problem description.	One part of the description is missing or inappropriate.	More than one part of the description is missing or indicates a misinter-pretation of the problem statement.	The description indicates a fundamental misunder-standing.	The solution does not include a description, and it is necessary for this problem / student.	A description is not necessary for this <u>problem.</u> (i.e., it has already been given to the solver)	A description is not necessary for this <u>solver,</u> as indicated by the overall solution process.
Specific Application of Physics**	The solution indicates an appropriate and complete application of physics to the specific conditions in this problem.	One relationship or condition is missing or indicates an error in the application of physics to this problem.	More than one relationship or condition is missing or indicate errors in the application of physics to this problem.	The application of physics to this problem indicates a fundamental misunder-standing.	The solution does not indicate a specific application of physics and it is necessary for this problem / student.	Specific application of physics is not necessary for this <u>problem</u>. (i.e., basic principles are sufficient)	Specific application of physics is not necessary for this <u>solver</u>, as indicated by the overall solution process.

	4	3	2	1	0	NA (Prob)	NA (Solver)
Mathematical Procedures	Suitable mathematical procedures are used and result in a reasonable answer or the answer is unreasonable and noticed.	Suitable mathematical procedures are used with minor error(s)	Suitable mathematical procedures are used with error(s) or answer is unreasonable and unnoticed.	Attempted mathematical procedures are inappropriate. (i.e., violate a fundamental rule of arithmetic)	There is no evidence of mathematical procedures in the problem solution and it is necessary for this problem / student.	Mathematical procedures are not necessary for this problem, or constitute a very small part of the solution.	Mathematical procedures are not necessary for this solver, as indicated by the overall solution process.
Logical Progression	The entire problem solution is focused and organized logically. The steps taken might not be linear, but guide the solver toward an answer.	The solution is focused and organized with minor inconsistencies and/or extraneous steps that don't guide the solution.	The solution is focused and organized with multiple inconsistencies and/or extraneous steps that don't guide the solution.	Parts of the solution are focused and organized. There are multiple inconsistencies and/or extraneous steps that don't guide the solution.	Nothing written can be interpreted as logical progression. The entire solution is unorganized and contains obvious logical breaks.	Logical progression is not necessary for this problem or constitutes a very small part of the solution (i.e., one-step problem).	Logical progression is not necessary for this solver, as indicated by the overall solution process.

*A "problem description" could include: restating knowns and unknowns, defining variables, stating goal or target variable, drawing a picture, stating qualitative expectations, abstracted physics diagram such as a force diagram or motion diagram, a coordinate system; and all variables are defined appropriately [such as m1 and m2 instead of just m]

**A "specific application of physics" includes a statement of definitions, relationships between the defined variables, initial conditions, and assumptions or constraints to the problem [i.e., friction negligible, constant acceleration, static equilibrium, etc.]