

PHYSICS 331 ADVANCED CLASSICAL MECHANICS
GUIDE TO PREPARING SOLUTIONS

The goal of a good solution is to be able to clearly lead a reader through the conceptual stages of your work. It requires you to state your assumptions, identify the physical principles that relate to the situation, and discussing the special circumstances of your problem. Keep in mind that your final solution should be comprehensible to someone who wants to learn how to do a problem.

The following is a list of suggestions that will help you to build a good solution.

- Do not write out the question, simply incorporate the question within the body of your solution. You can imply the question through the introductory remarks in your solution. (e.g. Consider the following situation. To determine the minimum speed with which the ball will not touch the surface, we will ...)
- Always include a quick sketch of the situation and use it to label variables you will use in your solution. Also clearly label your co-ordinate system, particularly the location of your origin and the direction which you choose as positive. (When using gravitational potential energy, be sure to state where you are taking $U_g = 0$.)
- Briefly describe each major step in your solution. (e.g. Calculating the time of the ball in flight, $y=0$.)
- State the physical principle(s) that you are using, first generally, and then specifically for your problem. Equations arising from the application of physical principles are your starting point, and consequently, should be numbered and referred to in your solution.
- At the end of all your work, check that your final result does indeed answer the original question. Also, check that you have included the units in your final answer. Finally, end your problem with a statement, i.e. a sentence. (e.g. The minimum speed necessary to ... is ...)

LITTLE ASIDES:

- When writing numbers that are smaller than 1, always add a “0” in front of the decimal point. (e.g. 0.429 NOT .429)
- When working on an algebraic problem where quantities are expressed as symbols, keep numerical constants as symbols too. That is, use “g” NOT 9.81 m/s^2 .
- Do not include the units of your equations until the statement of your final answer (it just clutters up your work).