

Problem Solving Procedure for Homework, Boardwork and Tests

In order to receive full credit for your solution, you need to complete the following steps:

1. You must begin with a complete **diagram**. Every symbol used in the calculation must be defined in the diagram. You may want to add symbols as you go along. If you use a vector component in your equations, you must draw the associated vector in your diagram and lightly draw in components based on the chosen coordinate system with arrow at the appropriate ends. If a vector is labeled, its components need not be.
2. Any derivation must begin with a correct rendition of an equation in the list of **Official Starting Equations (OSE)**. (Exception: purely mathematical problems, such as graphing or trigonometry.)
3. During your derivation, every physical quantity must be denoted by a symbol. Carry the symbols to the end of your derivation. Before using numerical values, you must create a **symbolic answer** with the symbol for the desired quantity alone on one side of the equal sign and symbols for system parameters and constants on the other. Draw a box around the symbolic answer
Your symbolic answer should not be specific to a particular coordinate system, i.e. it should not contain components, unless the coordinate system was specified in the original problem. For example, use $v_i \cos\theta$ and not v_{ix} if v_i and θ were the given quantities.
4. If the problem has numbers, you must **also** calculate a **numerical answer**. Substitute in numerical values *with their units* and make sure your result has the correct dimension. Box the numerical answer.
5. If you work on a part of a **multi-part question** that requires the answer for a prior part, you may use the symbol of your answer to the prior part throughout your derivation and then make the full symbolic substitution at the end. Your final symbolic answer must be in terms of symbols for the quantities originally given in the problem, unless otherwise specified.