

Problem-Solving Strategy

When doing problems, use the following procedure (applicable to physics and engineering problems as well. Note also that not every step in this procedure applies to every problem.)

1. Write down the problem statement in full, converting all physical units to a consistent set in the process. (That way, you can leave off the units during calculations, and simply tag them back on at the end.) Draw one small horizontal line to separate the problem statement from your solution.
2. Draw a large, clear picture of the situation described in the problem statement, applying labels to relevant quantities.
3. Identify the target variable. I.e., identify what it is for which you wish to solve.
4. Write down a correct equation involving the target variable.
5. Write down enough other correct equations so that you have enough equations to solve for the target variable.
6. Solve for the target variable, making sure not to plug in numbers for quantities until the end of the problem. After all, suppose the problem has several parts, each one “tweaking” the initial parameters a little bit? This way, you only have algebraically to solve once for the target variable.
7. Set the answer inside a box with appropriate units. Write down a sentence explaining or justifying your answer.

This is the process known as the “Problem-Solving Strategy”. Use it! It will save you untold hours of frustration, and it will help you focus on the necessary part of the mathematics.