Instructions for Reporting Lab 8 on Torque

As he is getting close to the end of term, there is less to learn concerning both physics writing and \LaTeX, so grasshopper puts to use all that he has learned before in reporting this lab. The new twist is that he has to start from scratch to create the writeup. However, this does not bother him much, because he realizes that he can simply cut and paste from previous labs. Thus he finds an old lab, cuts out the beginning part up to \texttt{\begin{document}} and edits it appropriately. He then adds the required \texttt{\end{document}}, \texttt{\maketitle}, and proceeds to add things in the middle. For this lab, he practices the “enumerate” environment to list all his answers and explanations in a list corresponding to the original instructions. He also picks up a couple more \LaTeX tricks along the way.

For lab 8 you will have to create your own writeup according to the instructions that follow. Easiest would be to cut and paste needed sections from an earlier lab writeup. Your writeup is to include only three items: a cover sheet, an itemized narrative of what you did, and an appendix concerning errors and error propagation.

**Cover Sheet:** Your cover sheet should be appropriately titled (Torque) and appropriately numbered (lab 8). So make sure you proofread, and don’t just cut and paste another cover sheet in without changing it. I will count off if you do.

**Itemized List:** The itemized list should be a list that correlates point by point with the steps in the lab instructions. This list can most easily be created using the \texttt{enumerate} command. That is, if you type

\begin{verbatim}
\begin{enumerate}
\item A sentence saying you weighed the meter stick and the result is $m_{\text{meter stick}}=0.200\pm0.001$ kg
\item A sentence about weighing the clamp
\item A sentence or short paragraph about finding the center of gravity \dots
\item etc.
\end{enumerate}
\end{verbatim}

you get

1. A sentence saying you weighed the meter stick and the result is $m_{\text{meter stick}}=0.200\pm0.001$ kg. (This is of course fictitious data.)
2. A sentence about weighing the clamp
3. A sentence or short paragraph about finding the center of gravity \dots
4. etc.

Each item can be a full paragraph and should include all calculations and results related to the corresponding item in the original instructions. In the itemized list you may simply report your results for errors, but then explain the general equations you used for calculating them in an appendix. (Hint: you will need combinations of the sum and product rules.)

\texttt{\textbf{LaTeX Tip:}} Note that the ‘enumerate’ environment is just one form of making lists. This environment numbers each point successively. Another form is the ‘itemize’ environment which makes each item a bullet point. If you include the ‘enumerate’ package (put \texttt{\usepackage{enumerate}} in the preamble) or the ‘enumitem’ package, you can also change the type of numerals used in the enumerate environment, e.g. \texttt{\begin{enumerate}\[I\]} would number the list with roman numerals. You can also nest enumerate environments for creating outlines. For more information, see the website:

http://texblog.org/2008/10/16/lists-enumerate-itemize-description-and-how-to-change-them/

\texttt{\textbf{LaTeX Tip:}} Note, in the above I included an \texttt{\hbox{}} (a horizontal box) in the subscript for the mass of the meter stick so that the two words would be treated as separate words. The \texttt{\hbox} also ensures that the text appropriately comes out in the standard font and not the slanted font used for mathematics.

**Appendix:** The appendix should include an explanation of how you estimated all errors associated with measurement, and also the equations used for propagating errors in your calculations.