Today’s homework continues Related Rates. There are two new skills. Homework is divided into two problem sets. The first guides you through the new skills. The second set requires you to find your own way.

1. Be able to create your own variables if needed.
   - [Click here for tips] on creating your own variables.
   - Every time you create your own variable, you must also write one sentence describing what it measures.
   - All graded work will be held to the following standard:
     **If your work includes a variable without a clear explanation of what it measures, your score is ZERO for the entire problem.**

2. Be able to organize your variables and rate of change data. Here is one possible approach:
   - Make a list of your variables.
   - Be sure you know what each variable measures. The best way to be sure is to write a one sentence description or draw an accurately labeled figure.
   - If you have numerical data for the variable, write it down.
   - Every variable has a rate of change (maybe zero). If you have rate of change data, write it down. You should end up with a chart of variables, derivatives, and data. For example, in a problem with variables \( V, r \) and \( h \), you might have

\[
\begin{align*}
V &= \underline{\text{ }} \\
r &= \underline{\text{ }} \\
h &= \underline{\text{ }} \\
\frac{dV}{dt} &= \underline{\text{ }} \\
\frac{dr}{dt} &= \underline{\text{ }} \\
\frac{dh}{dt} &= \underline{\text{ }}
\end{align*}
\]

   - Some of these boxes will have numbers. Others you have to figure out.
   - Make sure you have a good variable list. There is no “right” list, but there are two clear ways to be wrong.
     - If you are given a rate of change, but it’s not in one of your boxes, your list is wrong.
     - If the problem asks for a rate of change, and it’s not in your chart, your list is wrong.