Post-lab Problem 5 (2a)

Calculate and report the answer to the correct number of significant digits:

$$720.0 + 5.4 \times 10^2 - 117 - 0.064$$

Write the addition and subtraction vertically, lining up the decimal points. The last significant digit in each value is in ***bold italics***.

$$\begin{array}{r} 720.\boldsymbol{0} \\ +\ 5\boldsymbol{4}0 \\ -\ 11\boldsymbol{7} \\ -\quad 0.06\boldsymbol{4} \\ \hline 11\underline{\boldsymbol{4}}2.936 \end{array}$$

Since 5***4***0 is the least precise of these values, with the last significant digit in the 10's place, your answer cannot be any more precise than the 10's place: 11$\underline{\boldsymbol{4}}$0

Post-lab problem 8 (2d)

We're going to do the same thing here, but order of operations says that we have to do all the multiplication and division first.

$$\frac{2516.32 \times 1.13 \times 10^{-4}}{6.00} + 8.7 \times 10^{-2} - 6.842 \times 0.0030$$

The fraction calculates out to be 0.0473907. Since this fraction is made up of only multiplication and division, all you have to do is count the number of digits in each number to see how many to keep. ***1.13***$\times 10^{-4}$ and ***6.00*** each have three significant digits, and that's what limits the number of significant digits in your answer. ***0.0473***907. But do not round yet!

Next do the other multiplication: ***6.842*** × 0.00***30*** = ***2.0***526 Since 0.0030 has only two significant digits, your answer here has only two significant digits. But keep them all for now.

With all the multiplication and division done, we're on to addition and subtraction, so we'll do this just like the first one.

The significant digits in each number are in ***bold italics***. Since we're adding and subtracting here, the final answer can't go to a decimal place beyond the least precise number we're working with.

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  0.047***3***907
+ 0.08***7***
- 2.***0***526
- 1.***9***182093
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2.0526 is only good to the tenths place, so our answer can't go past the tenths place, and ends up being 2 significant digits: -1.9

Keep all the digits during the calculation, but remember how many of them are significant. Do all your rounding at the end of the calculation. If you rounded -2.0526 to -2.1 in the middle of the calculation, you would get a different (and incorrect) answer for your final result.