

Sig Figs Summary Resource:

If you are unfamiliar with sig figs – here are the important things you need to know:

- 1- Significant figures are all about measurement: they indicate the precision of the tool that was used to take the measurement. In general, the person using the tool should be able to determine the measurement to one decimal place past the mark on the tool. The last digit of this recorded measurement is an educated guess that increases the accuracy of the measurement. A scientist should always record data as precisely as possible.

For Example: Your ruler has a mark at 2 cm and at 3 cm. You can clearly see that the item you are measuring is between 2 and 3 cm, but closer to 3cm. You might record 2.7 or 2.8 cm as a reasonable measurement. This measurement would contain 2 significant figures. If a student recorded 3 cm, it would be too imprecise (and, yes, Dr. Akin would be deducting points from his/her lab). If a student recorded 2.79 cm, it would also be incorrect, because the tool did not allow for that much precision.

- 2- When doing calculations, the precision of the data must be reflected in your answer. In order to do so, there are two sig fig rules to follow:
 - a. When adding and subtracting data, you round the final answer to the same decimal place that contained significant figures in all the data included.

For Example: You are adding $2.33\text{cm} + 1.23\text{cm} + 2.2\text{cm} = 5.8\text{cm}$. You cannot report a digit in the hundredths place because one piece of data was not that precise.

- b. When multiplying or dividing data, you round the final answer to have the same number of significant figures as the least exact piece of data you used in the calculation.

For Example: You are dividing $2.301\text{g}/1.71\text{ml} = 1.35\text{ g/ml}$. One measurement contained 4 sig figs but the other only contained 3 sig figs. For this reason, your answer must be rounded to show only 3 sig figs. Each calculation's precision is limited by the imprecision in the least precise measurement.

Need more help? Check out these two videos!

<https://www.youtube.com/watch?v=wTWKZGLUg58>

<https://www.youtube.com/watch?v=kB2szfcwu1A>