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Tips for chemistry exams, quizzes, lab reports

from Dr. Lisa Struck

1) Standard Scientific Notation is written with only one digit in front of the decimal.

i.e. 4.8×10^3 not: $48. \times 10^2$

2) Standard Scientific Notation is written in the following format: 3.2×10^3

Not: 3.2E3 Not: 3.2EE3 Not: 3.2x10^3 (When you are writing by hand, you can easily write a superscript. The "carrot" can be used when you are typing into a program that does not have the capability to write a superscript.)

3) You must write the zero in front of a decimal. Yes: 0.148 Not: .148
(The reason is that the second example can easily be mistaken for 148. This could be a terrible mistake if this was a medicine dose, or dimensions on a building design, or even your grade, etc. I actually once had a student that did this in a problem on a test, and later in that problem, the student mistakenly used 148 instead of 0.148.)

4) When showing calculations, typically in math "x" represents times. However, we might have equations with the variable x included. While in some cases the x is not mistaken, i.e. 0.25 x 100 = 25 %, while in others it could be mistaken. Therefore, in most cases (when you are hand writing a calculation), I prefer you use "*" (star), for example: 2.35*4.21; or parentheses next to each other, for example: (2.35)(4.21).

5) When showing calculations, you must use an equal sign after the calculation and before the answer. Yes: (2.35)(4.21) = 9.89
Not: (2.35)(4.21) 9.89 , This looks like you are multiplying 9.89 with the other numbers.

6) Show all work. This means:

a) Show original equation, if applicable.

b) Show equation **solved,** if applicable. You do not have to show all of the algebra, however, if you do I can give you more partial credit.

c) Substitute number and units into the solved equation. (I need to see what numbers you used and if you multiplied them, divided them, etc.) One reason, is I can give you more partial credit.

d) Write an equals sign. Write the answer to the correct number of significant figures and write the units.

example: question: area = 25.0 ft.^{2} and length = 10.0 ft., what is the width?

a) original equation: area = length x width

b) show equation solved; and part c) and part d):

$$\text{width} = \frac{\text{area}}{\text{length}} = \frac{25.0\ \text{ft.}^2}{10.0\ \text{ft.}} = 2.50\ \text{ft.}$$

7) For calculations, use exact conversions, if it is at all possible.

8) Every number must have a unit after the number.

Not: °C = 25 yes: °C = 25°C, or preferably: $T_{^\circ C} = 25\ ^\circ C$

9) **Print Legibly!** If I cannot read your letters, words, or numbers, then I cannot give you full credit.

10) Always PRINT on anything that spelling is important (or counts on a test). Put a SPACE between letters. The letters "ol" could be mistaken for a "d" if written to close or letters are overlapping. If you are writing a couple of sentences, for example writing a definition, you may write in cursive neatly. I need to be able to read most of the words to give you credit.

11) Print letters the way you learned in first grade. **Someone else already decided what each letter is supposed to look like.** This is not an art class where you could make letters look like you want, which would be essentially designing a new font. On a test, I grade your answers based on what letters are supposed to look like. On a test, I cannot assume that you meant to write a letter "r" (as in read) when it looks like a "v" or a "*r*" (that looks closer to a v than an r). **On a test**, you are supposed to **prove** that you know the answers, not have me guess what you meant, nor should I have to learn a new font for each student.

12) For the capital I as in Idaho, please write the horizontal bar at the top and bottom of the letter. Some fonts just write a single vertical line, however, that can be confused with a number "one", or a lowercase "l" as in "laugh". The following compound (aluminum iodide) should be written as AlI_3 or $A\mathcal{I}_3$, and not All_3.

13) When you write <u>an ion, or a charge</u>, you <u>must write the "+" for positive charges</u>, even though in math you can write: ….. = +2 = 2

14) In science, you usually <u>do not report an answer as a fraction, but in decimal form</u>, so you can write it as accurately as you know the number. (This means use Significant Figure rules.)

15) If you are <u>given a conversion, never assume it is exact</u>. Usually, it will not be exact. Therefore, you count the number of significant figures. For all of the conversions that I asked you to memorize, I also asked you to memorize that they are exact. However, if you are given a conversion, and not told that it is exact, but you remember that this conversion is exact, then you can treat it as an exact number. For example, given on the test is: 1 mile = 5280 ft. This is not a conversion that I asked you to memorize. In this example, you are not told whether this conversion is exact or not. So, you would not treat it as exact. Except if you happened to know that this is an exact number (which it is), then you may treat it as an exact number