A Chemistry Notecard Model

Well-organized notes for chemistry problems and solutions are very helpful to learners trying to **understand how** to solve various problems in chemistry classes. How chemistry notes are organized can speed or slow learning of the steps to solving each type of chemistry problem. This model incorporates the value of a step-by-step approach to understanding and learning solutions to chemistry problems.

Step 1: Buy some 4 x 6 or 5 x 8 notecards. Then set-up each type of chemistry problem on the notecards in the following manner.

Front of a Notecard with an Example

Aids:

1. *Equations – p.114*
2. *Charts/tables – lect. 3/17*
3. *Formulas - p. 259*
4. *Mnemonics – example: Please excuse my dear aunt Sally.*

Need to know for gas law problems:

(examples)

1. *How to convert units for different quantities.*
2. *The Ideal gas law formula.*

[Etc.]

source – Gas Law (study guide p. 119)

At constant pressure, a balloon of hydrogen gas initially at 25°C and 5.4L is cooled until its final volume is 2.1L. What is the final temperature in degrees Celsius?

- Record aids to solving this particular type of problem along with the source of these aids.
- Name the type of problem and put the problem along with the source (text p. #, lecture/problem session date).

Adapted from: Congos, Dennis H. (2011) Starting Out in Community College.Chicago, Il: McGraw-Hill

Back of the Notecard with an Example

1. PV=nRT **2. Table** Initial: V = 5.4L, T = 25°C Final: V = 2.1L, T = ? **3. Convert 25°C to K.** T = 298K **4. PV/nt = PV/nt** **5. V/T = V/T** **6. $T_f = (T_i \, , \, V_i)V_f$** **7. T_f = 2.1L 298K/5.4L Result is T_f = 116K.** **8. T_f = 273K – 116K = -157°C** **study guide p. 119**	**Step 1: Rite the Ideal Gas Law** **Step 2: Organize table** **Step 3: Label & convert** **Step 4: Adjust formula (manipulate)** **Step 5: Immobilize the constants** **Step 6: Determine unknown** **Step 7: Substitute data, solve** **Step 8: Answer in units asked for** Mnemonic - Gas problems? ROLAIDS A

- Do the solution step-by-step.
- In short phrases, write a narration of what is done in each step of a solution for this type of problem.
- Include a mnemonic to help you remember the steps in solving this type of problem.

Step 2: Divide the notecard into 4 sections, 2 on the front and 2 on the back.

Section 1: **Include relevant prerequisites** for solving this type of problem.
Section 2: **Identify the type of problem** and record it here.
Section 3: **Do the solution to the problem, step-by-step**. When finished, check the answer to make certain it is correct.
Section 4: **Write the words for you did in each step** in Section 3. This narration becomes the rules for solving this type of chemistry problem in the future.

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How to Use the Notecards to Speed Learn Chemistry

Every 2 to 3 days, practice doing the problems on your chemistry notecards. This practice will help you understand, learn, and remember solutions to chemistry problems. It will also move solutions deeper into your long-term memory.

1. Look at a problem on a notecard.
2. Attempt a solution on scrap paper, from memory, even if you *believe* you know the solution.
3. When finished, turn the card over to see if you have the done the solution correctly.
4. If you have, place that notecard in the "I know this" pile.
5. If your solution was all or partially incorrect, make corrections using your notecard as a guide.
6. Turn the card over exposing the problem again, and on another piece of scrap paper, attempt the solution again. Do this procedure as many times as necessary to work the solution properly and then place the notecard in the "I don't know this, yet" pile.

Reciting notecards in this manner speeds your learning of solutions to chemistry problems and you see what you have learned and what remains to be learned *before you take a test* when you can still do something about it.

This type of note organization model in chemistry has several benefits:

1. This model demonstrates the ***vital importance*** **of realizing and listing, in the form of prerequisites, what you must know in order to solve each type of problem** (formulas, equations, charts/tables, etc).
2. You may repeatedly **practice how to solve each type of problem** by looking at a problem and recalling solutions from memory. This also has you rehearsing the *very activity* they must perform when taking a test.
3. **Rules for solving the various types of chemistry problems** are formulated on the notecards. Rules consist of a **narration of what is done in each step**. This not only speeds understanding of solutions in general, it also allows learners who have primary verbal processing skills (vs. primary quantitative processing skills) to use their strengths for learning chemistry. Narration is a tremendous aid to these verbal learners (indispensable for some) who *traditionally* have difficulty with quantitative problem solving.
4. You are given a chance to **practice and/or check your understanding of a solution** by actively practicing solutions. This prevents you from entering a test situation simply ***"by*** understanding how to solve that problem". This also lowers test anxiety and reduces the numbers of careless errors on tests.
5. Include **where problems are from in textbooks and lectures.** This encourages the use of these valuable resources as guides to understanding solutions to chemistry problems.

You become better at that which you practice. If you practice not doing chemistry problems, you become better at that also.

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