

## Semester 2 Final Exam Helpful Hints

Name: \_\_\_\_\_

Chemistry

Date: \_\_\_\_\_ Hour \_\_\_\_\_

*Chemistry students are allowed a “cheat sheet” for their final exam. It is in a student’s best interest to take full advantage of this opportunity to have an additional, customized resource for the exam. Below is a list of the major topics covered in each unit. The items that are italicized are items your teacher would specifically include on their own note card if they were to create one.*

### Cheat Sheet Rules:

- You are allowed only ONE “cheat sheet” -- it must be the document provided by your teacher.
  - You are permitted to answer the practice questions (with necessary work shown) and you may add additional notes **below the line**. No other notes/information may be added to the margins of the handout.
  - Your work/notes must be **handwritten**.
  - You may NOT share your “cheat sheet” with anyone else.
  - Your teacher will NOT help you or provide answers on the “cheat sheet”.
- \* Failure to meet all criteria above will render your “cheat sheet” ineligible for use on the exam. As a consequence, the “cheat sheet” will be collected and destroyed before the exam begins.
- \*\* ALL “cheat sheets” will be **collected and destroyed** after the exam.

## Semester 1 Topics:

*\*Note: these topics were covered during the 1<sup>st</sup> semester, but fundamental ideas still apply in 2<sup>nd</sup> semester!!*

### Unit 1 - Math & Measurement

- Dimensional Analysis (Metric Conversions) → *Metric prefixes and powers of 10*
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### Unit 2 - Atomic Structure and Counting Particles

- Avogadro’s number → *What is it? What is it used for?*
  - Molar mass → *How to calculate with names, units, and symbols.*
  - Dimensional Analysis → *(1-step and 2-step problems) conversion factors, How-to’s with examples.  
moles → grams, moles → particles, particles → grams .....and back.*
  - Ions → *How to calculate charge. Define.*
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### Unit 6 - Ionic Bonding

- Determine the charge of an ion → *How-to with examples*
  - Writing Ionic Compound Formulas → *How-to with examples. (Binary, Polyatomic, Transition Metals)*
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## Semester 2 Topics: (Units 7, 9, & 10 on back)

### Unit 8 - Stoichiometry

- Setting up a BCA table → *Example table, how to use*
  - Convert moles → mass / mass → moles → *Example problem and conversion factors.*
  - Convert moles → particles / particles → moles → *Example problem and conversion factors.*
  - Determining limiting/excess reactants → *Example problem/FLOWCHART from limiting/excess pogil KEY*
  - Calculating percent yield → *Formula*
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## Unit 7 - Chemical Reactions

- Balance chemical equations (LOCO M) → *Steps on how to...*
  - Read and write skeleton and word equations
  - Ionic Solubility → *How to use solubility rules (Rules are provided on your periodic table.) & Particle pictures*
  - Molarity → *Formula, Example calculations, Relationships and definitions*
  - Double Replacement
    - *Determine if a precipitate forms*
    - *Particle pictures*
    - *Generic reaction and Predict products. (need to know ion charges for correct formulas)*
    - *Complete and Net Ionic Equations (how-to and examples)*
  - Single Replacement
    - *Use the activity series to determine IF rxn takes place (Activity Series will be provided)*
    - *Particle Pictures*
    - *Generic reaction and Predict products. (need to know ion charges for correct formulas)*
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## Unit 9 - Thermochemistry

- Variables, units, and names
  - Exo vs endothermic reactions → *examples/definitions/q and H values.*
  - Specific Heat → *definition how to calculate*
  - LOCO E → *Define, calculate*
  - Calorimetry → *Example problem WITH UNITS using the table.*
  - Thermochemistry Stoichiometry & Thermochemical Equations → *example problem and conversion factors.*
  - Enthalpy (Heat) → *define and calculate the following ways:*
    - *Heat of reaction using energy diagram → draw endo vs. exo graph and calculate H*
    - *Heat of reaction using standard heats of formation → Define, Diatomic and element rule, Standard heat of a reaction formula. (heats of formation for substances will be given to you)*
    - *Heat of reaction using bond energies → Bond energies formula (lewis dot structures of the substances will be provided along with a chart of bond energies)*
    - *Hess's Law → step-by step directions, example problem, (known chemical equations with enthalpies will be provided)*
  - Kinetic Molecular Theory → *define*
  - States of Matter → *Properties of each (particle level)*
  - Phase changes → *enthalpies and how they are related to each other. Endo vs. Exo change.*
  - Heating Curve graphs → *Labeled heat curve graph w/ formulas*
  - Enthalpy of phase changes → *Example, multi-step problem*
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## Unit 10 - Gasses

- Properties of Gases → *4 properties/characteristics, 4 variables used to describe gases*
- Kinetic Molecular Theory for gases *How pressure is defined/calculated, How to increase # of collisions or FORCE behind the collisions.*
- Charles' Law, Boyle's Law, Gay-Lussac's Law, Avogadro's Law
  - *Formulas, constants, graphs, particle-level descriptions (use the key to the Gas Inquiry Sim. Packet)*
- Combined Gas Law → *Formula and relationships in it.*
- Ideal Gas Law → *formula, gas constants (both atm and kPa)*
- Gas Density → *formula, identify gas using molar mass*
- Gas Stoichiometry → *example problem and conversion factors.*