

Preparing for Exam 1
Chem 130 Spring 2020

Questions will be taken from Chapters 1 to 3 (as far as we went in lecture on Wednesday, Feb 12), and reading linear scales. I'm planning to include 50 points of multiple choice questions (20-25 questions), and 50 points of written responses. The Scantron you need is shown in a separate post on the website.

The test will primarily cover lecture material, and the reading of a linear scale we saw in lecture and lab. What to study? You lecture notes and examples therein, practice in the skills class from Weeks 2 and 3 (exclude precision, accuracy, and relative uncertainty), WebAssign problems, and re-reading your textbook.

Any updates to these topics will be posted no later than Sunday morning, Feb 16.

Only non-programmable scientific calculators may be used! No graphing calculators.

The multiple choice questions will cover all topics from the chapters, but pay most attention to these:

- Major features of the scientific method (observation, hypothesis, experiment, law, theory).
- Element names and symbols (the 50 from the memorization sheet).
- Scientific notation.
 - Convert regular ('float' on many calculators) notation to and from scientific notation.
- Significant figures and rounding.
 - Count sig figs in a measurement.
 - Express calculated answers with the correct number of sig figs.
 - Round an answer to the correct number of digits.
- Unit conversion.
 - Likely one-step conversions; longer problems with multiple conversion factors will be in the written questions.
 - Needed equivalences involving English units will be provided.
- Temperature, density and mass percent calculations.
 - As with unit conversions, only simple problems in the multiple-choice, longer problems in the written section.
 - Temperature conversion formulas will be provided.
- States of matter (solid, liquid, gas).
- Classification of matter: element, compound, heterogeneous mixture, homogeneous mixture.
- Memorize info at the top of the 'Stuff to Memorize' sheet: SI Base units (exclude energy), SI Powers of 10, Exact Equivalences (exclude the $1 \text{ cal} = 4.184 \text{ J}$ equivalence), and you can skip Numeric Prefixes.
- Features of the Periodic Table.
 - Organization (groups and periods; groups numbered from 1 to 18).
 - Families (alkali metals, alkaline earth metals, halogens, noble gases).
 - Types of elements (metals, nonmetals, and metalloids).
 - Properties of metals, nonmetals, and metalloids.
- Counting atoms in a chemical formula.

The topics for the written questions are:

- Element names and symbols (like quiz)
- Unit conversion involving several conversion factors.
- Percent composition by mass calculation, and using percent composition as a conversion factor.
- Density calculation, and using density as a conversion factor.
- Calculations (sig figs, rounding). Get to know your calculator before the test!
- Reading linear scales (increment, family, absolute uncertainty, and the measurement).