

I. The Scientific Method

Refer to handout of notes:

1. hypothesis
2. What sets science (ex: auto engineering) apart from mere hypothetico-deductive reasoning (ex: auto mechanics)?
3. natural law vs. theory

II. What is Chemistry?

Definition(s):

III. Measurement (Metrics)

Metric system:

1. base units: meter, liter, gram, second, etc.
2. prefixes: pico-, nano-, micro-, milli-, centi-, deci-, etc. and their symbols

IV. Uncertainty and Reliability in Measurement— Refer to homework set for practice reading a measuring device or instrument correctly—meniscus and what-not**V. Significant Figures (Digits)**—See mrthaler.net for rules; refer to homework set for practice

- A. Definition:
- B. Atlantic-Pacific Rule
- C. Sig figs in calculations

VI. Scientific Notation—See mrthaler.net for rules; refer to homework set for practice.**VII. Dimensional Analysis**—See mrthaler.net for rules; refer to homework set for practice.**VIII. Percent Error** = $\frac{|\text{measured value} - \text{accepted value}|}{\text{accepted value}} \times 100$; be able to use.**IX. Properties of Matter**

- A. Definition of matter:
- B. Mass vs. weight: When are they the same (in chemistry)? When are they different?
- C. Density (mass/volume)
- D. States of matter (phases of matter): Definitions:
- E. Changes of state (phase changes): terminology, examples
- F. Physical vs. chemical change: definitions, examples
- G. Law of conservation of matter (mass): Know it and any conditions and/or exceptions.
- H. Pure substances (elements & compounds) vs. mixtures (homogeneous, or solutions, & heterogeneous)

X. And anything from the reading is FAIR GAME.