CHEMISTRY ♦ FALL 2014 ♦ DR. BRESLYN

www.breslyn.org

Name:
Date:

Safety:

- Always wear goggles for labs.
- Long hair should be tied back before a lab.
- Report all accidents to the teacher immediately.
- Point the open end of a test tube away from you and others.
- Off-task behavior is never appropriate in lab.
- Eating is never permitted in the lab/classroom.

Important!

You are responsible for any information in these notes. Not all information will be covered in class.

Matter is anything that has mass and occupies space. Mass is the amount of matter an object contains.

States of Matter (o = an atom)

Solid (*s*)	Liquid (*l*)	Gas (*g*)	plasma

A **substance** is a type of matter with a uniform composition.

In Your Book

Ch. 1: p 2-10
Ch. 2: p27-32, 37-46

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Well-Designed Experimental Investigations

1) **Testable Question**: A question that can be answered through an investigation.

2) **Prediction or Hypothesis**: A statement about what may happen in the investigation based on prior knowledge, research, and/or evidence from previous investigations.

3) **Well-Designed Procedure**: includes variables that can affect the results, materials needed, directions or procedure, repeated trials, and data collection.

4) **Conclusion**: A statement, supported by evidence, identifying the pattern (repeating cycle) or trend (general drift, tendency, or direction of a set of data) based on an analysis of the data collected during the investigation.

5) **Communication and Discussion**: A presentation of your findings to others for critical analysis, followed by a discussion of your conclusion/summary and supporting evidence. Discussion leads to the identification of more testable questions, clarifies understanding, and addresses misconceptions.

First 20 Elements

		Atomic #
H	Hydrogen	1
He	Helium	2
Li	Lithium	3
Be	Beryllium	4
B	Boron	5
C	Carbon	6
N	Nitrogen	7
O	Oxygen	8
F	Fluorine	9
Ne	Neon	10
Na	Sodium	11
Mg	Magnesium	12
Al	Aluminum	13
Si	Silicon	14
P	Phosphorous	15
S	Sulfur	16
Cl	Chlorine	17
Ar	Argon	18
K	Potassium	19
Ca	Calcium	20

Qualitative Measurement: descriptive, non-numerical. For example, color.

Quantitative Measurement: deals with quantities, usually with numbers. Things like mass, density, number of molecules.

Accuracy: how close to the actual or true value of the measurement.

Precision: how close several measurements are to each other.

Units to Commit to Memory

$1\ cm^3 = 1\ mL$ 1m = 1000mm $1\ cm^3$ of $H_2O = 1\ g$ (at 4ºC)

1000 mL = 1L 1 mol = 6.02×10^{23} particles 1 kg = 1000g

Math Review

Scientific Notation: used to represent very small or very big numbers. Consist of a coefficient and a power of ten.

$0.00004 = 4.0 \times 10^{-5}$ $120000 = 1.2 \times 10^{5}$

International System of Units, SI: a revised version of the metric system.

Significant Figures: An answer cannot be more precise than the least precise measurement.

The accuracy of any measurement is limited by the accuracy of the instrument. If a balance can only read two digits after the decimal, your answer cannot be any more accurate than this number.

Practice:

Convert to/from Scientific Notation:	Convert to the unit listed.
2.33×10^3 cm = _____	2.2 mol = _____ particles
0.00034 cm = _____	273 K = _____ °C
0.022 mol = _____	1000 mm = _____ m
0.0000072 cm = _____	3 mL (at 4ºC) = _____ cm^3 of H_2O
340000 mm = _____	6.02×10^{23} particles = _____mol
1.79×10^{-3} m = _____	12.04×10^{23} = _____mol
19999.32 cm = _____	$1\ cm^3$ of H_2O = _____ mL (at 4ºC)

Accurate (and Precise)

Precise

Neither

SI Units to Know

length – **meter** – m
mass – **kilogram** – kg
temperature – **kelvin** – k
amt substance - **mole** - mol
pressure – **pascal** – Pa
energy – **joule** – J

1 mm is about the thickness of a credit card

A newborn baby is about 3 kg.

A dollar weighs about 1 g.

Visit the class website for practice with scientific notation.