

Unit 1: What is Chemistry?

- The study of the _____ and the _____ that matter can undergo.



– [Is it a liquid or a solid?](#)

- Considered the _____ as it _____ the other sciences.

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5 Areas of Study:

- _____: study of all chemicals containing the element carbon
- _____: study of all chemicals without carbon
- _____: study of chemical processes that occur in living organisms
- _____: study of the composition of matter
- _____: study of matter when it undergoes a change

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Why is chemistry important to you:

- Helps to explain the _____
 - Why gum _____ when you drink something _____ or _____
 - Why _____ will change _____ when exposed to _____
- Prepares you for a _____
 - Many _____ may have _____ related topics
- Makes you an informed _____
 - You may help make _____ in your homes and community based on what you learn/know

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Making Observations:

- Using your _____ to gather info/data
 - _____: Quantity, amount or number
 - Ex. there are _____ students
 - Ex. He made _____ of his free throws
 - _____: Quality or appearance
 - Ex. They are very _____
 - Ex. She has _____

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The Scientific Method: PHEOC(R)

- State the _____ or question you are wondering.
- Form a _____, or _____, about your problem.
- Set up a _____ to test your hypothesis.
- Record _____ and analyze results through _____.
- Draw a _____.
- _____ the investigation.

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Experiment Design

- Variables: Factors that _____ such as equipment, temperature, light and time
 - _____: the one that is deliberately changed. (Always on the '____' axis in a graph)
 - _____: observed and changes in response to the manipulated or independent variable ('____' axis)
 - It is important to only change _____ variable at a time
- _____: factors that _____ in an experiment.

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Scientific Theory:

- A well tested _____ that unifies a broad range of observations.
- Allows scientists to make accurate _____.
- May become the _____ among a majority of scientists.
- Is _____ considered an absolute truth (ex. _____).
 - May be _____ as more evidence is uncovered.

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Measurement: Tools and Procedures:

- In order to retest and replicate experiments, a common system of measurement is needed:

- Based on multiples of _____
- Numbers in science without _____ mean NOTHING and have no inherent _____
 - All numbers need meaningful _____

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SI units (System International)

- Volume → _____
 - Mass → _____
 - Length → _____
 - Temperature → degrees _____ (Celsius used also)
 - Time → _____
 - Amount → _____
 - Electric Current → _____
- **grams, liters, meters = ROOT or BASE WORDS**

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SI Prefixes:

<u>Prefix</u>	<u>Abbreviation</u>	<u>Factor</u>
• Tera	T	10^{12}
• Giga	G	10^9
• Mega	M	10^6
• Kilo**	K	10^3
• Hecto**	h	10^2
• Deka**	da	10^1
• Deci**	d	10^{-1}
• Centi**	c	10^{-2}
• Milli**	m	10^{-3}
• Micro	u	10^{-6}
• Nano	n	10^{-9}
• Pico	p	10^{-12}

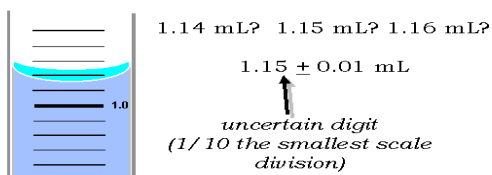
• ****=Typically used with ROOT/BASE WORDS=****

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Uncertainty in Measurement:

- When measuring, it is important to be _____ as possible, however, there is always a bit of _____ involved
- _____ is always estimated

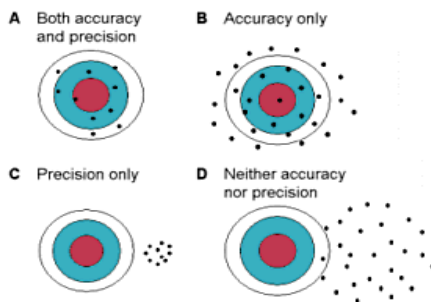
Uncertainty in Measurements



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Accuracy vs. Precision:

- _____ - how close to the accepted value a measurement is
- _____ - how reproducible your results are (how close they are to one another)



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Dimensional Analysis:(Factor Label)

- Conversion from _____ to _____ during an experiment or calculation may be very important.
- Conversion Factors
 - A ratio derived from the _____, always equal to 1
 - Ex. 12 inches = 1 foot (not a ratio)
 $\frac{12\text{inches}}{1\text{ foot}}$ (ratio) also as 12inches:1 foot

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Dimensional Analysis continued

- Factor Label Method
- Used in calculating metric conversions
- Ex. How many inches are in 40 feet?
 - Start with given and set up with conversion factor

****The units you want to determine should be the numerator in the conversion factor.**** (inches in the above example)

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