Chapter 0

Intro to Chem 309

Intro Part 1:
Chem 309 On-line Course Resources

- Canvas (the e-learning link on the SCC website)
- LibreText with Agenda
  - Video Lecture Outlines
  - Video Lectures
- Basic Knowledge Practice Quizzes

Canvas

A repository for some of the materials distributed in class.

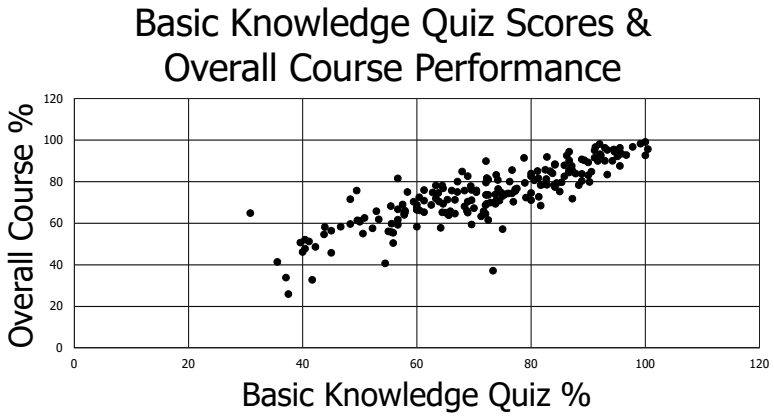
- General Handouts
- Links to On-line Resources
- Supplemental Homework - Blank Copies
- Selected Answer Keys

Chem 309 is an in-person class with web-enhancement.

LibreText

- Chapters like a traditional text
  - Interactive & Instructive Animations
- Chapter homework with olutions
- Agenda with assignments due for EACH class session
  - Links to Video Lecture Outlines
  - Links to Video Lectures

Basic Knowledge Practice Quizzes



Course Basic Knowledge needs to be memorized so that it can be applied to more difficult course concepts.

Intro Part 2: Underlying Basic Knowledge

Chemistry: the study of the universe and the changes it undergoes

Matter & Energy

*work: moving an object against an opposing force

Periodic Table

1 Group IA	2 Group IIA	3 Group IIIB	4 Group IVB	5 Group VB	6 Group VIB	7 Group VIIB	8 Group	9 Group VIIIB	10 Group	11 Group IB	12 Group IIB	13 Group IIIA	14 Group IVA	15 Group VA	16 Group VIA	17 Group VIIA	18 Group VIIIA
1 H 1.01																	2 He 4.00
3 Li 6.94	4 Be 9.01											5 B 10.81	6 C 12.01	7 N 14.01	8 O 16.00	9 F 19.00	10 Ne 20.18
11 Na 22.99	12 Mg 24.30	13 Al 26.98	14 Si 28.09	15 P 30.97	16 S 32.06	17 Cl 35.45	18 Ar 39.95										
19 K 39.10	20 Ca 40.08	21 Sc 44.96	22 Ti 47.87	23 V 50.94	24 Cr 52.00	25 Mn 54.94	26 Fe 55.84	27 Co 58.93	28 Ni 58.69	29 Cu 63.55	30 Zn 65.39	31 Ga 69.72	32 Ge 72.64	33 As 74.92	34 Se 78.96	35 Br 79.90	36 Kr 83.80
37 Rb 85.47	38 Sr 87.62	39 Y 88.91	40 Zr 91.22	41 Nb 92.91	42 Mo 95.94	43 Tc (98)	44 Ru 101.07	45 Rh 102.91	46 Pd 106.42	47 Ag 107.87	48 Cd 112.41	49 In 114.82	50 Sn 118.71	51 Sb 121.76	52 Te 127.60	53 I 126.90	54 Xe 131.29
55 Cs 132.91	56 Ba 137.33	57 La 138.91	72 Hf 178.49	73 Ta 180.95	74 W 183.84	75 Re 186.21	76 Os 190.23	77 Ir 192.22	78 Pt 195.08	79 Au 196.97	80 Hg 200.59	81 Tl 204.38	82 Pb 207.2	83 Bi 208.98	84 Po (209)	85 At (210)	86 Rn (222)
87 Fr (223)	88 Ra (226)	89 Ac (227)	104 Rf (261)	105 Db (262)	106 Sg (266)	107 Bh (264)	108 Hs (269)	109 Mt (268)	110 – (271)	111 – (272)	112 – (277)		114 – (289)		116 – (289)		118 – (293)

Chemical Symbols

Periodic Table

Atoms are arranged according to their outermost elections.

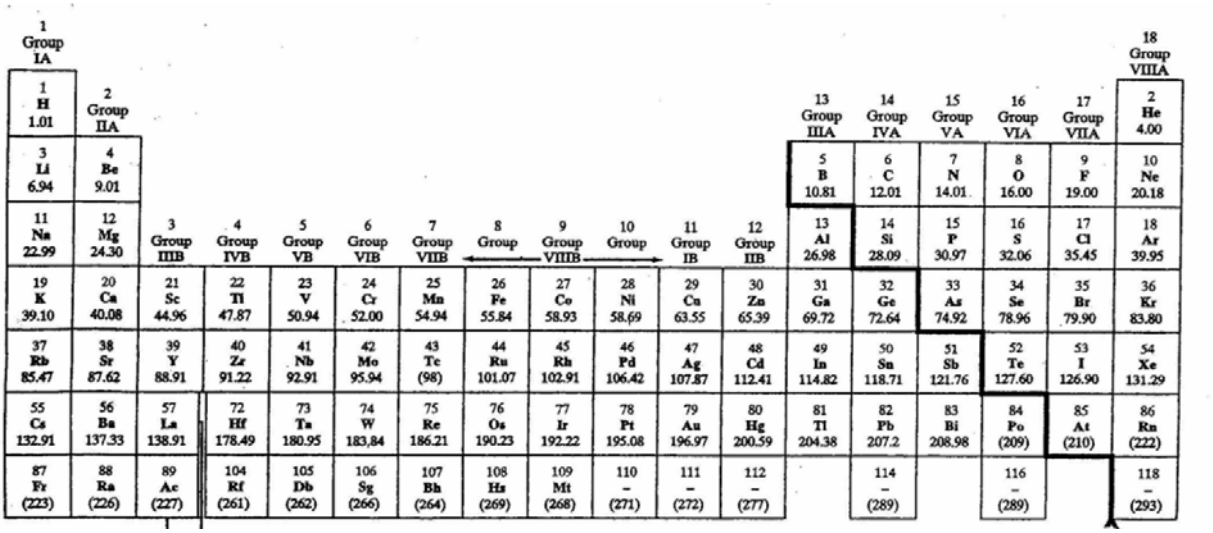
Atoms are _____.

Some elements can lose electrons to become _____.

Some elements can gain electrons to become_____.

We indicate charge using the top, right corner of the symbol.

Repeating patterns of chemical reactivity created Group Names.



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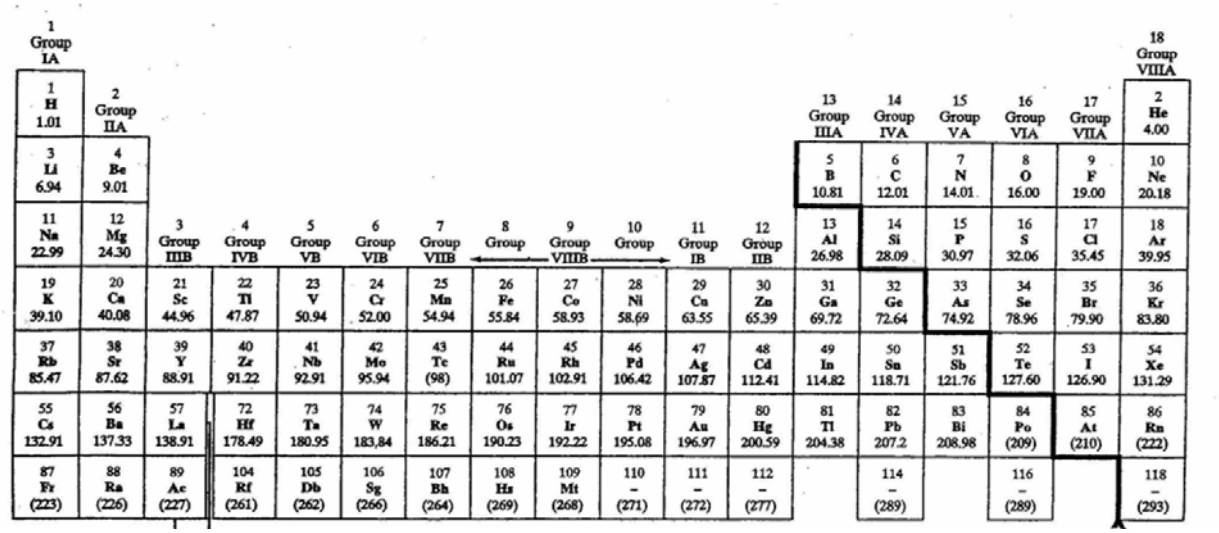
Inorganic vs Organic Chemistry



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Inorganic

Organic

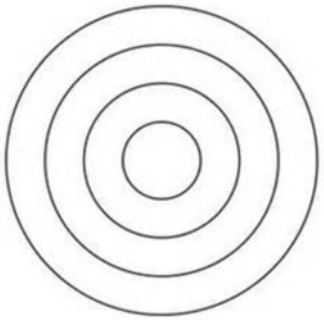
Intro Part 3: Intro to Matter & Measurement

We study Matter and Energy by making Measurements.

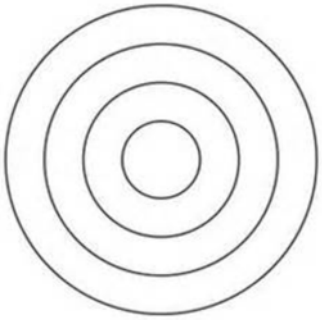
Measurements ALWAYS have some degree of uncertainty.

The uncertainty in a measurement depends on the _____ & _____ of the measuring device, as well as human errors and the variation between samples.

Precision



Accuracy



Exact Number:

Inexact Number:

Measurements:

Checking for understanding of Accuracy and Precision:

The accepted value of a distance is 27.2 m.

	Data Set A	Data Set B	Data Set C
	27 m	29.1 m	25.1 m
	26 m	29.3 m	28.3 m
	28 m	29.2 m	26.9 m
average	27 m	29.2 m	26.8 m

Which data set has greater precision?

Which data set has greater accuracy?

Units help us translate word problems into calculations.

What physical property is being measured – mass, volume or length?

a) 42 g

b) 75 mL

c) 21 cm^3