0.2 Converting Units 0.3 Density

1) Find the density if volume is 3.00 mL and mass is 2.50 g.

2) Find the volume if density is 5.65 g/mL and mass is 500.0 kg. (Careful of different units!)

3) Find the mass of a 20 cm x 20 cm x 50 cm bar of gold (19.3 g/cm<sup>3</sup> is the density of gold).

0.4 Significant Figures

Count the sig figs. 0.00500 1.2345 1.53520 2.33000 5,000,000 5,000,000

Do some calculations using the right number of sig figs: 5.00 cm x 5.000 cm 3.333 mol x 2.00 g/mol 1.000 m x 523.152 m

0.5 Scientific Notation

Covert to Scientific Notation 5,100,000 3,000 0.000 015 23 (the spaces are just to help you count) 0.000 000 0324

Convert to Standard Notation 1.5 x 10<sup>5</sup> 7.77 x 10<sup>-4</sup>

Do some math (3.0 x 10<sup>5</sup>) + (2.0 x 10<sup>3</sup>) (3.0 x 10<sup>5</sup>) x (2.0 x 10<sup>3</sup>)

## 1.2 States of Matter

Answer the following three questions for Gas, Liquid, and Solid Is the volume fixed? Is the mass fixed? Is the shape fixed?

What is condensation? What is sublimation? What is deposition?

1.3 Mixtures & Pure Substance

What's the difference between a homogeneous mixture, heterogeneous mixture, element, or compound?

For each say whether it's a homogeneous mixture, heterogeneous mixture, element, or compound:

Silver	Pizza	Sugar	Chromium
Water	Hydrogen	Beer	Salt
Oxygen	Gold	Magnesium	Dime
Air	Sulfur	Carbon	Nickel

## 2.1 Subatomic Particles

For each, list the atomic #, atomic mass, # of protons, electrons, & neutrons. You can use a periodic table. Boron-12 Oxygen-16 Carbon-13 Magnesium-26 Lithium with 5 neutrons Tungsten with 111 neutrons

Describe Thompson's cathode-ray tube experiment and Rutherford's gold foil experiment and what was discovered from each.

2.3 Grams, Moles, Molecules 0.2 Converting Units

Convert 5.025 moles of Helium to grams. Convert 5,360 grams of Gold to moles. Convert 2.05 x  $10^{24}$  atoms of Boron to moles. Convert 10.00 moles of Silver to atoms. Convert 15.00 grams of water to molecules. Convert 1.2044 x 1024 molecules of CO<sub>2</sub> to grams.

3.1 Parts of the Periodic Table Use the periodic table below (try not to use your book here!)

Which group are the: Alkali metals Halogens Noble Gases Transition Metals Give 2 properties of the Alkali-Earth Metals Give 2 properties of the transition metals

Hydrogen		т	'he F	Perio	odic	Tabl	e of	the	Eler	nent	S						Heium
3	4	1										5	6	7	8	9	10
Li	Be			3		- Atomi	c Numbe	er				I B	C	N	0	F	Ne
Lithium	Beryllium			LI-		- Eleme	nt Symb	ol				Boron	Carbon	Nitrogen	Oxygen	Fluorine	Neon
6.94	9.01	-		6.94		- Eleme	nt Name					10.81	12.01	14.01	16.00	19.00	20.18
Na	Ma					- Avera	ne Atomi	c Maee				ΔΙ	Si	D	C	CI	Ar
Socium	Macrossium			100		Avera	ge Atomi	0 101033				Aluminum	Sicon	Phosphorus	Siller	Chiorine	Aroon
22.99	24.31											26.98	28.09	30.97	32.07	35.45	39.95
19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
ĸ	Ca	SC		V	Ur	MIN	Fe	CO	NI	Gu	Zn	Ga	Ge	AS	Se	Br	Kr
otassium 39.10	Calcium 40.08	Scandium 44.96	Titanium 47.87	Vanadium 60.94	Chromium 52.00	Manganese 54 94	1ron 55.85	Cobalt 58.92	Nickel KR 80	Copper 63.65	Zinc 66.30	Gallum 69.72	Germanium 72.61	Arsenic 74.02	Selenium 78.96	Bromine 79.90	Krypton 83.80
37	38	39	40	41	42	43	44	45	46	47	48	49	50	51	52	53	54
Rb	Sr	Y	Zr	Nb	Mo	TC	Ru	Rh	Pd	Aa	Cd	In	Sn	Sb	Te		Xe
lubidium	Strontium	Yttrium	Zirconium	Nobium	Molybednum	Technetium	Ruthenium	Phodum	Paladum	Silver	Cadmium	Indium	Tin	Antimony	Telurium	lodine	Xenon
85,47	87.62	88.91	91.22	92.91	95.94	(96)	101.07	102.91	106.42	107.87	112.41	114.82	118.71	121.76	127.60	126.90	131.29
Co.	Do	10	1/2	To	VAL	Do	00		D	A	Lles	51	Dh	83 D:	Do	85 A4	Dm
65	Dd	Ld		Id	VV	ne	US	IF	PL	Au	пg		PD	DI	PU	AL	RI
132.91	137.33	138.91	178.49	180.95	183.84	186.21	190.23	192.22	195.08	Gold 196.97	200.59	204.38	207.2	208.98	(209)	(210)	(222)
87	88	89	104	105	106	107	108	109	110	111	112						
Fr	Ra	AC	Rf	Db	Sq	Bh	Hs	Mt	Ds	Rq	Cn						
rancium	Radium	Actinium	Rutherlordium	Dubnium	Seaborgium	Bohrium	Hassum	Meitnerium	Damstadium	Roentgenium	Copernicium						
(223)	(226)	(227)	178.49	(262)	(206)	(264)	(209)	(268)	(281)	(2/2)	(285)		<u> </u>				<u> </u>
			1	60	Dr	Ald	Dm	Cm	63	Cd	Th	Dur	Ho.	68	T	Vh	1
				ue	Pr	Ma	rm	211	EU	ua	ai	Dy	по	EL	Im	TD	LU
				Cerium 140.12	Paseodymium 140.91	Neodymium 144.24	Promethium (145)	Samarium 150.36	Europium 151.96	Gadolinium 157.25	Terbium 158.93	Dysprosium 162.50	164.93	Erbium 167.26	168.93	173.04	174.97
				90	91	92	93	94	95	96	97	98	99	100	101	102	103
				Th	Pa	U	Np	Pu	Am	Cm	Bk	Cf	Es	Fm	Md	No	Lr
				Thorium	Proactinium	Uranium	Neptunium	Plutonium	Americium	Curium	Berkellum	Californium	Enstenium	Fermium	Mendelevium	Nobelium	Lawrencium
				232.04	231.04	238,03	(237)	(244)	(243)	(247)	(247)	(251)	(252)	(257)	168,93	(259)	(2

## 3.2 Periodic Trends

Here are the trends: Atomic Radius Melting, Boiling Point Electronegativity Ionization energy

Define each and explain why each increases or decreases as you go across and down the table.

## 4.1 ID Ionic & Covalent Compounds

Identify the following compounds as Ionic, polar-covalent, or non-polar covalent. You may use pg 194 & 195 in your textbook & your polyatomic ions sheet.

F<sub>2</sub> H<sub>2</sub>O NaCl NH<sub>4</sub>Cl

Explain why we subtract the electronegativity to find the nature of the bond.

4.2 Names & Formulas of Ionic & Covalent Compounds

4.1 ID Ionic & Covalent Compounds

Name each of these compounds (First you might need to find out whether they are Ionic or Covalent!) You may use pg 194, 195 of your textbook as well as your polyatomic ions sheet.

 $\begin{array}{l} NaCl \\ PO_3 \\ C_3S_4 \\ LiF \\ Cs_2CO_3 \\ CoBr_2 \\ Cu_2S_3 \end{array}$ 

4.3 Lewis Structures

Sketch the Lewis Diagrams for each of these molecules:  $PBr_3$ N<sub>2</sub>H<sub>2</sub> CH<sub>3</sub>OH NO<sub>2</sub><sup>-1</sup> C<sub>2</sub>H<sub>2</sub>