

CHEMISTRY UNIT REVIEW

1. Complete the following chart

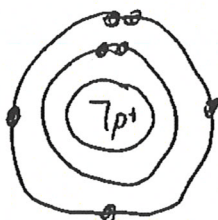
Name	Atom or Ion	# of p ⁺	# of e ⁻	charge
fluoride	ion	9	10	-1
magnesium	atom	12	12	0
oxide	ion	8	10	-2
hydrogen	cation	1	0	+1

2. Draw Bohr models for the following atoms and ions

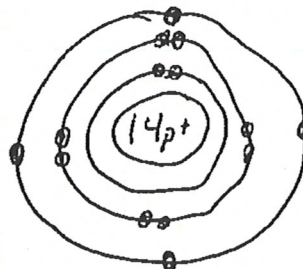
a. beryllium ion



b. nitrogen atom



c. silicon atom



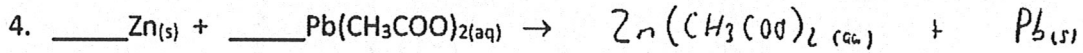
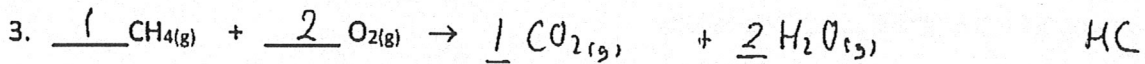
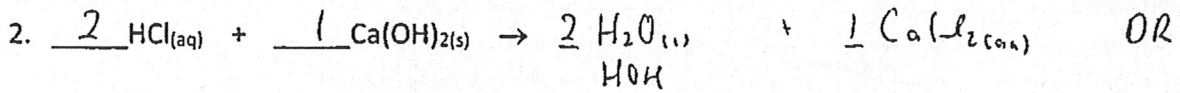
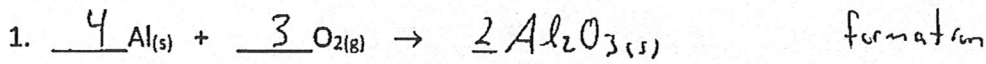
3. Complete the following chart. All of the elements below are atoms

Name	Family	Mass #	# of p ⁺	# of neutrons	# of e ⁻
calcium	alkali earth	43	20	23	20
sodium	alkali	23	11	14	11
tin	transition metals	87	50	37	50
chlorine	halogens	37	17	20	17

4. Fill in the chart below

Type of Compound (I, M or A)	Name of Compound	Formula of Compound
M	diphosphorus tetrafluoride	P ₂ F ₄ (l)
As₂S₃ M	diarsenic trisulfide	As ₂ S ₃
A	nitrous acid	HNO ₂ (aq)
M	ethanol	C ₂ H ₅ OH
I	iron(III) thiocyanate	Fe(SCN) ₃ (s)
I	aluminum silicate	Al ₂ (SiO ₃) ₂
M	diboron hexafluoride	B ₂ F ₆ (l)
M	selenium dichloride	SeCl ₂
I	magnesium sulfide	MgS(s)
A	chromic acid	H ₂ CrO ₄

5. Complete the following reactions and Balance each of the following reactions. State the type of reaction for each.



6. Calculate the molar mass of each of the following

a. copper (I) carbonate Cu_2CO_3

187.11 g/mol

b. sodium chromate Na_2CrO_4

161.98 g/mol

7. How many moles are found in 15.5 g of silicon tetrachloride?

$M = 169.89 \text{ g/mol}$

$m = 15.5 \text{ g}$

$n = \frac{m}{M} = \frac{15.5 \text{ g}}{169.89 \text{ g/mol}} = 0.091235$

$n = 0.0912 \text{ mol}$

8. How many molecules of ammonia are found in 45.6 g of ammonia?

$m = 45.6 \text{ g}$

$m = nM$

$M = 17.04 \text{ g/mol}$

$45.6 \text{ g} = n (17.04 \text{ g/mol})$

$n = 2.676 \dots \text{ mol}$

$\# \text{ of molecules} = n \times N_A = (2.676 \dots \text{ mol}) \times (6.02 \times 10^{23} \frac{\text{molecules}}{\text{mol}})$

$\# \text{ of molecules} = 1.6109 \dots \times 10^{24} = 1.61 \times 10^{24} \text{ molecules}$

9. A sample of water contains 7.26×10^{22} molecules. What is the mass of the water sample?

$\# \text{ of molecules} = 7.26 \times 10^{22} \text{ molecules}$

$\# \text{ of molecules} = n \times N_A$

$7.26 \times 10^{22} \text{ molecules} = n \times (6.02 \times 10^{23} \frac{\text{molecules}}{\text{mol}})$

$n = 0.1205 \dots \text{ mol}$

$m = nM$

$m = (0.1205 \dots \text{ mol}) (18.02 \text{ g/mol})$

$m = 2.1731 \dots \text{ g}$

$m = 2.17 \text{ g}$