Chunk #1 - spring final

(1) 1.485×10^4

(2) 3.87×10^{-4}

(3) 52800

(4) 0.00875

(5) K - kilo

(6) c - centi

(7) KHDBdcm

29.4

294000

(8) KHDBdcm

3405.2

0.034052

(9) $\frac{4\ mi}{1\ hr} \left| \frac{1.609\ km}{1\ mi} \right| \frac{1000\ m}{1\ km} \left\| \frac{1\ hr}{60\ min} \right| \frac{1\ min}{60\ sec} = 1.79 \frac{m}{sec.}$

(10) $\frac{19.2\ mi}{1\ min} \left| \frac{1.609\ km}{1\ mi} \right| \frac{1000\ m}{1\ km} \left\| \frac{60\ min}{1\ hr.} \right. = 1853568 \frac{m}{hr}$

(11) $\frac{52\ m}{1\ sec.} \left| \frac{1\ km}{1000\ m} \right| \frac{1\ mi}{1.609\ km} \left\| \frac{60\ sec}{1\ min} \right| \frac{60\ min}{1\ hr.} = 116.3 \frac{mi}{hr}$

(12) no change to the components - same molecules when done

(13) change to the componets - new substance when done

(14) melting, bending, freezing, crushing, cutting

(15) burning, rotting, digesting, cooking

(16) protons plus neutrons

(17) number of protons

(18) Ag = 47p, 61n, 47e⁻

(19) Cl = 17p, 18n, 17e⁻
Ba = 56p, 81n, 56e⁻
C = 6p, 6n, 6e⁻
Ne = 10p, 10n, 10e⁻

(20) Mg

(21) 8n, 6p, 6e⁻
6n, 6p, 6e⁻

(22) an area an e⁻ is most likely to be found
a probability cloud
only 2 e⁻ per orbital

(23)

S P

(24) 2, 6, 10, 14

(25)

3p ↑↓ ↑ ↑	3p ↑↓ ↑↓ ↑
3s ↑↓	3s ↑↓
2p ↑↓ ↑↓ ↑↓	2p ↑↓ ↑↓ ↑↓
2s ↑↓	2s ↑↓
1s ↑↓	1s ↑↓
sulfur	chlorine

(26) Ge

(27) K

(28) H = $1s^1$

He = $1s^2$

K = $1s^2 2s^2 2p^6 3s^2 3p^6 4s^1$

Ca = $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$

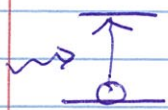
Zn = $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10}$

I = $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6 5s^2 4d^{10} 5p^5$

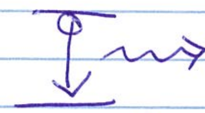
Kr = $1s^2 2s^2 2p^6 3s^2 3p^6 4s^2 3d^{10} 4p^6$

Chunk #2 - Spring Final

1. to get a full valence shell

2. 

energy in, e⁻ goes up a level to "excited state"

3. 

e⁻ falls back down to "ground state" & energy is released.

4.

α	β	γ
+2	−1	∅
neg.	pos.	neither

5. α^{4}_{2} OR He^{4}_{2} , β^{0}_{-1} or e^{0}_{-1} , γ^{0}_{0}

6. alpha, gamma, beta

7. $^{99}_{44}Ru$

8. $^{4}_{2}He$ or $^{4}_{2}\alpha$

9. $AE = AS * 0.5^{t/h}$
$AE = 1.75 * 0.5^{(243.5/44.5)} = 3.94 \times 10^{-2}\ g$

10. $AE = 85 * 0.5^{(35/35)} = 42.5g$ 5wks = 35days

11. yes, no

12. they are on the outside

13. the e⁻ in the last filled orbital

14. 1, 1, 2, 7, 6, 6, 4, 3

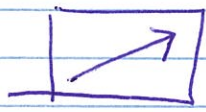
15. see your notebook!

Chunk #2

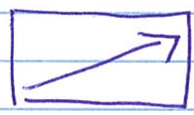
16) Li, Ca
O, F
Si, Ge
Fe, Cu

17) lose 2, gain 2, gain 1, gain 3

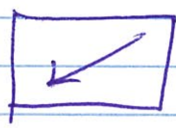
18) +1, +2, -1, ∅

19) 

20) Fr, Ca, Na, Fe, S, F

21) 

22) Fr, Ca, Na, Fe, S, F

23) 

24) F, S, Fe, Na, Ca, Fr

25) ionic, covalent, metallic

26) ionic = m-nm
covalent = nm-nm
metallic = m-m

27) ionic, covalent, metallic, ionic

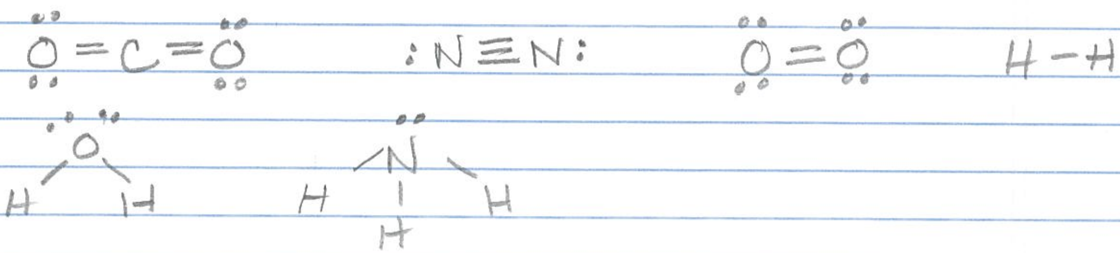
28) cation first then anion,
same name - change end to -ide
most transition metals need roman numerals

29) use prefixes! except no mono for first element, and last element ends in -ide, careful w/ some double vowels

(30) copper (II) chloride
potassium sulfide
alumenum oxide
Calcium oxide
sodium sulfate

(31) phosphorous pentachloride
dihydrogen monoxide
carbon tetrahydride
hexacarbon dodecahydrogen hexoxide

Spring Final - Chunk #3 KEY

1. Ga_2O_3 $CaCl_2$ $NaNO_3$ $Ca_3(PO_3)_2$ FeF_3
2. CCl_4 N_2H_5 PI_3
3. most elements want 8 valence e^-
4. H, B, P, S
5. 
6. single - H_2, H_2O, NH_3
   double - CO_2, O_2
   triple - N_2

   lone pairs
   $CO_2 = 4$
   $N_2 = 2$
   $O_2 = 4$
   $H_2O = 2$
   $NH_3 = 1$
7. H–Cl: single; :N≡N: triple; :C≡O: triple
8. London, dipole-dipole, hydrogen bonding
9. CH_4, H_2 london; HCl, CO dipole; H_2O, NH_3 hydrogen bond
10. DNA, proteins
11. Hbond, London, HBond, HBond, dipole, london, dipole
12. Hbond, dipole, london } inter
    Ionic, covalent } intra

Chunk #3

(13) unequal e^- distribution

H – Cl (with dipole arrow →)   (H – Cl) (electron cloud)   H – Cl, δ^+ δ^-

(14) polar, polar, non, non, non, polar, non

(15) because it makes it polar if its bent

(16) $CH_4 < CH_3OCH_3 < CH_3OH$

(17) CH_3CH_2OH b/c H bond vs. CH_3OCH_3 only dipole

(18) see your notebook!

(19) ionic lattice, metallic, network covalent

(20) very high

(21) diamond, graphite

(22) $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

(23) $2Al(OH)_3 \rightarrow Al_2O_3 + 3H_2O$

(24) double Repl. Single Repl.
Synth. Combustion

(25) $Na_2O + Ca$

(26) $CO_2 + H_2O$

(27) Na_2S $CaSO_4$

(28) 174.3 g/mol 241.2 g/mol

(29) $\frac{5.9\,g \mid 1\,mol}{\mid 39.95\,g} = 0.148\,mol$

Chunk #3

(30) $\frac{12.65\,g}{} \Big| \frac{1\,mol}{18\,g} = 0.703\ mol$

(31) $\frac{2.7 \times 10^{41}\ atoms}{} \Big| \frac{1\,mol}{6.02 \times 10^{23}\ atoms} \Big| \frac{58.69\,g}{1\,mol}$

$= 2.63 \times 10^{19}\ g$

(32) $\frac{50\,mL}{} \Big| \frac{1\,g}{1\,mL} \Big| \frac{1\,mol}{18\,g} \Big| \frac{6.02 \times 10^{23}\ molec.}{1\,mol} \Big| \frac{3\ atoms}{1\ molec.}$

$= 5.02 \times 10^{24}\ atoms$