E.O.C retest review

+1 1 +2 2

A AE

Bondtypes

I - M+N

C - N+N

M - M+M

TM

Metals

+3 +/-4 -3 -2 -1 0

3 4 5 6 7 8

NG

Non-Metals

1 1A												13 3A	14 4A	15 5A	16 6A	17 7A	18 8A
1 H Hydrogen 1.008	2 2A																2 He Helium 4.003
3 Li Lithium 6.941	4 Be Beryllium 9.012											5 B Boron 10.81	6 C Carbon 12.01	7 N Nitrogen 14.01	8 O Oxygen 16.00	9 F Fluorine 19.00	10 Ne Neon 20.18
11 Na Sodium 22.99	12 Mg Magnesium 24.32	3 3B	4 4B	5 5B	6 6B	7 7B	8 8B	9 8B	10 8B	11 1B	12 2B	13 Al Aluminum 26.98	14 Si Silicon 28.09	15 P Phosphorus 30.97	16 S Sulfur 32.07	17 Cl Chlorine 35.45	18 Ar Argon 39.95
19 K Potassium 39.10	20 Ca Calcium 40.08	21 Sc Scandium 44.96	22 Ti Titanium 47.88	23 V Vanadium 50.94	24 Cr Chromium 52.00	25 Mn Manganese 54.94	26 Fe Iron 55.85	27 Co Cobalt 58.93	28 Ni Nickel 58.69	29 Cu Copper 63.55	30 Zn Zinc 65.39	31 Ga Gallium 69.72	32 Ge Germanium 72.61	33 As Arsenic 74.92	34 Se Selenium 78.96	35 Br Bromine 79.90	36 Kr Krypton 83.80
37 Rb Rubidium 85.47	38 Sr Strontium 87.62	39 Y Yttrium 88.91	40 Zr Zirconium 91.22	41 Nb Niobium 92.91	42 Mo Molybdenum 95.94	43 Tc Technetium (98)	44 Ru Ruthenium 101.1	45 Rh Rhodium 102.9	46 Pd Palladium 106.4	47 Ag Silver 107.9	48 Cd Cadmium 112.4	49 In Indium 114.8	50 Sn Tin 118.7	51 Sb Antimony 121.8	52 Te Tellurium 127.6	53 I Iodine 126.9	54 Xe Xenon 131.3
55 Cs Cesium 132.	56 Ba Barium 137.	57 La Lanthanum 138.	72 Hf Hafnium 178.	73 Ta Tantalum 181.0	74 W Tungsten 183.8	75 Re Rhenium 186.	76 Os Osmium 190.2	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.96	80 Hg Mercury 200.59	81 Tl Thallium 204.38	82 Pb Lead 207.2	83 Bi Bismuth 208.98	84 Po Polonium (209)	85 At Astatine (210)	86 Rn Radon (222)
87 Fr Francium (223)	88 Ra Radium 226.0	89 Ac Actinium 227.0	104 Rf Rutherfordium (260)	105 Db Dubnium (262)	106 Sg Seaborgium (263)	107 Bh Bohrium (262)	108 Hs Hassium (265)	109 Mt Meitnerium (268)	110 Uun Ununnilium (269)	111 Uuu Unununium (272)	112 Uub Ununbium (277)						

58 Ce Cerium 140.1	59 Pr Praseodymium 140.9	60 Nd Neodymium 144.2	61 Pm Promethium (145)	62 Sm Samarium 150.4	63 Eu Europium 152.0	64 Gd Gadolinium 157.3	65 Tb Terbium 158.9	66 Dy Dysprosium 162.5	67 Ho Holmium 164.9	68 Er Erbium 167.3	69 Tm Thulium 168.9	70 Yb Ytterbium 173.0	71 Lu Lutetium 175.0
90 Th Thorium 232.0	91 Pa Protactinium 231.0	92 U Uranium 238.0	93 Np Neptunium 237.0	94 Pu Plutonium (244)	95 Am Americium (243)	96 Cm Curium (247)	97 Bk Berkelium (247)	98 Cf Californium (251)	99 Es Einsteinium (252)	100 Fm Fermium (257)	101 Md Mendelevium (258)	102 No Nobelium (259)	103 Lr Lawrencium (262)

Physical Science Reference Tables

Motion and Energy

$\bar{v} = \frac{\Delta d}{\Delta t}$

v = velocity

d = position

t = time

$a = \frac{v_f - v_i}{\Delta t}$

a = uniform acceleration

$F = ma$

F = force

$F_g = mg$

m = mass

$W = F\Delta d$

F_g = weight

g = acceleration due gravity on Earth = 9.8 m/s/s

$P = \frac{W}{\Delta t}$

W = work

$PE_g = mgh = F_g h$

P = power

$KE = \frac{1}{2}mv^2$

PE_g = gravitational potential energy

h = height

m/s - velocity

m/s² - acc.

N - weight (F_g)

kg - mass

$v_w = f\lambda$

KE = kinetic energy

v_w = wave velocity

f = frequency

λ = wavelength

Electricity

$V = IR$

$P = VI$

V = electrical potential difference

I = current

R = resistance

P = power

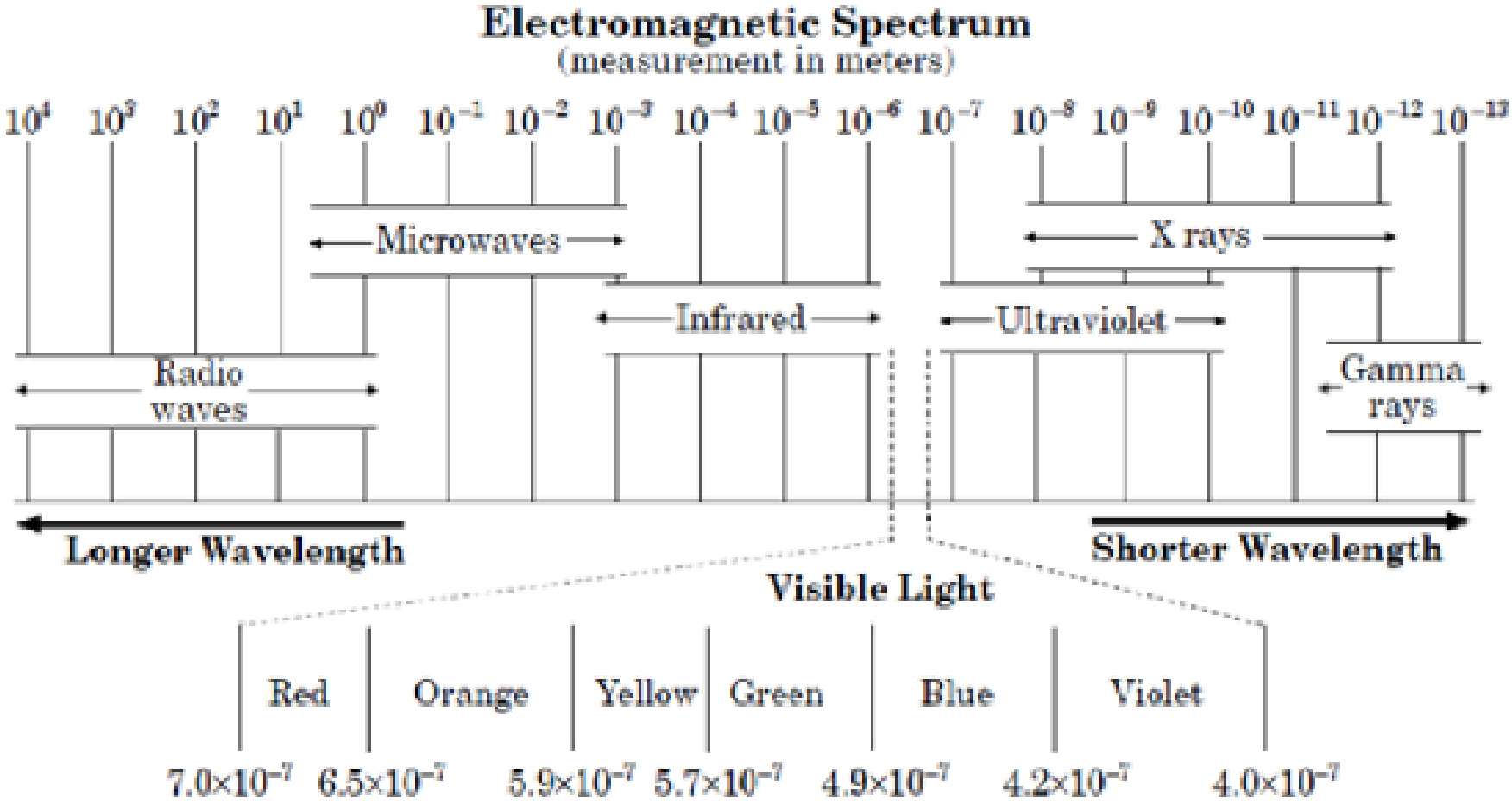
Density

$D = \frac{m}{V}$

D = density

m = mass

V = volume

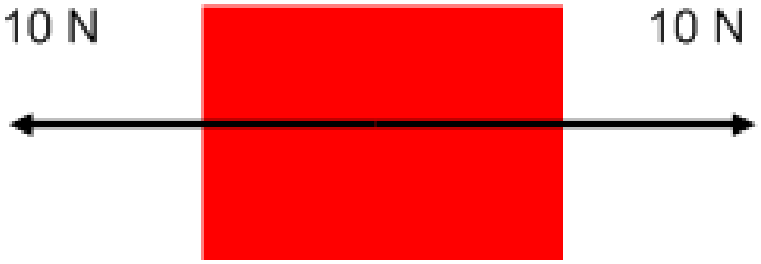


Frequency ↓
Energy ↓

↑ Frequency
↑ Energy

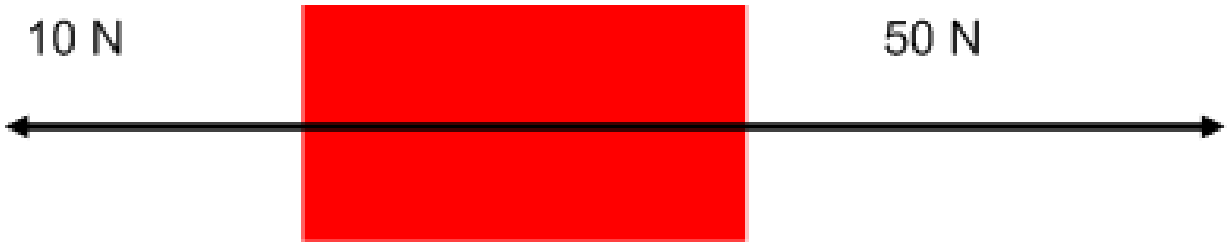
Polyatomic Ions	
NH_4^+	Ammonium
$C_2H_3O_2^-$	Acetate
ClO_3^-	Chlorate
MnO_4^-	Permanganate
NO_3^-	Nitrate
OH^-	Hydroxide
CO_3^{2-}	Carbonate
CrO_4^{2-}	Chromate
SO_4^{2-}	Sulfate
PO_4^{3-}	Phosphate

Forces and Newton's Laws



Balanced

Constant Velocity(may be ZERO)



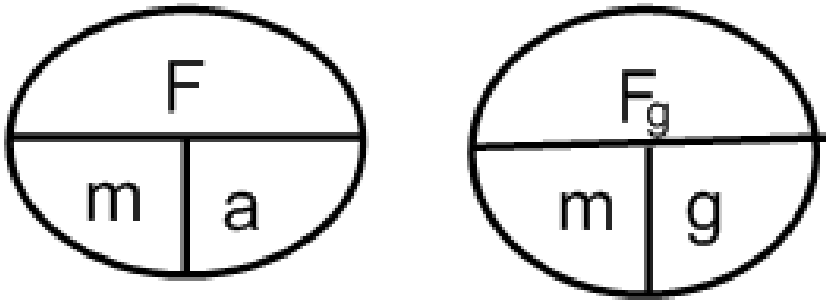
unbalanced

Acceleration

Newton's Laws

1st Law: An object at rest....unless an unbalanced force acts.

2nd Law: $F = m\ a$ or $F_g = m\ g$



--If the force increases, acceleration increases!
--If mass increases, acceleration decreases!

3rd Law: For every action there is an equal but opposite reaction!!

--If the force of the book pushing on the desk is 30 N, then the force of the desk pushing back on the book is....?

30N

Energy

Potential Energy: has to do with height!!

--with pictures, higher has more potential!

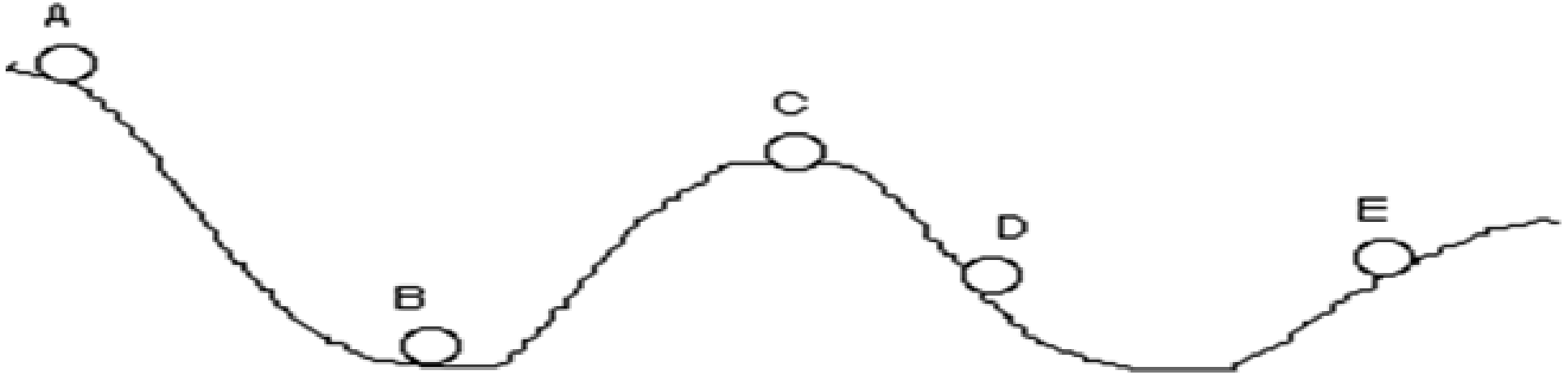
Kinetic Energy: has to do with velocity!

--faster...more KE, slower...less KE

Conservation of Energy: Total Energy(Mechanical Energy stays the same!

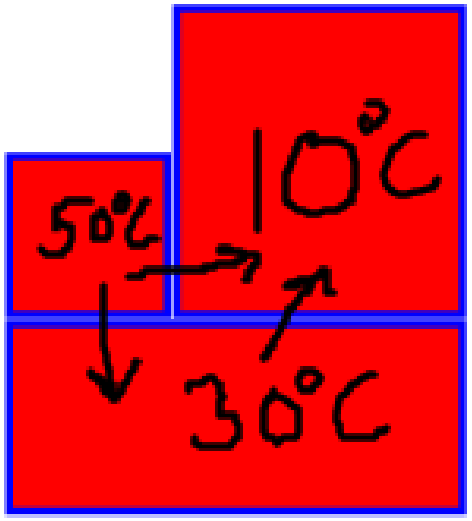
--with pictures, Higher(more PE, less KE)

Lower(less PE, more KE)



HEAT

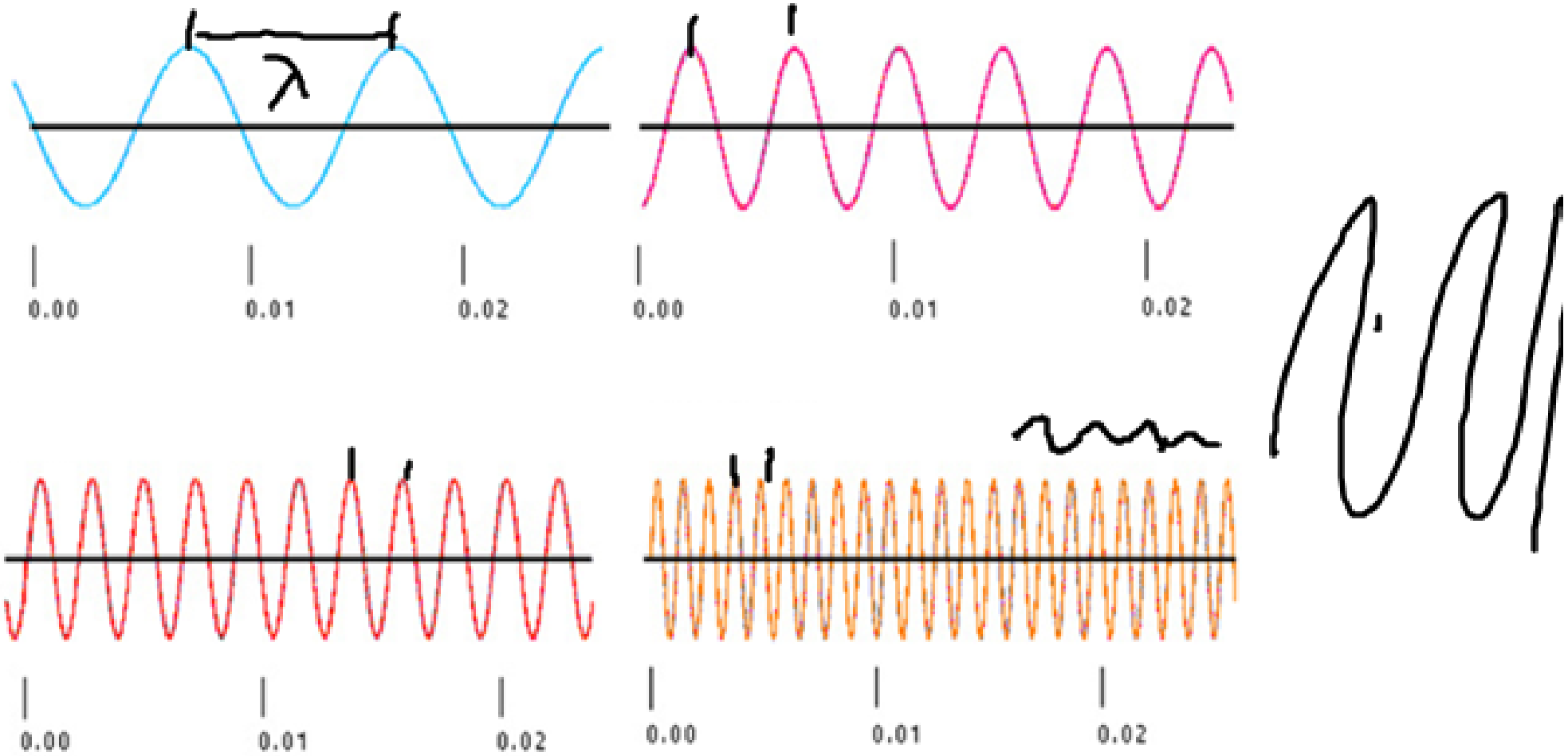
**Heat always flows from High(temp) to Low(temp)!!



In order to figure out direction of heat flow, all you have to do is look at the temperatures!!

Waves

Comparing waves:
Frequency, wavelength, amplitude(amount of Energy)



Electricity:

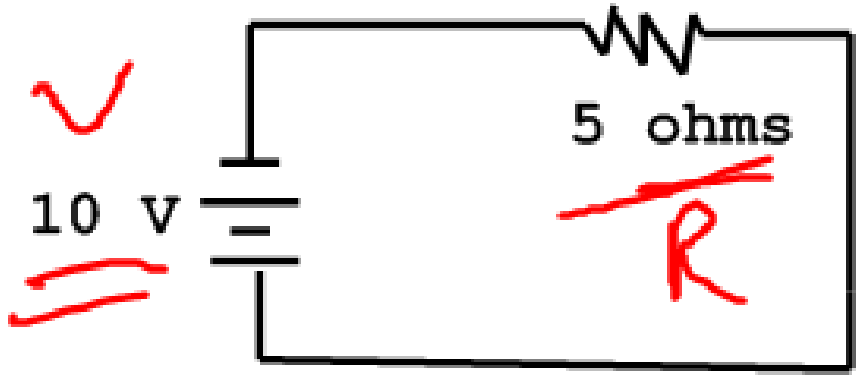
$V = I R$

--Be able to use Ohm's law(V=IR)

--If V increases, current increases

--If R increases, current decreases

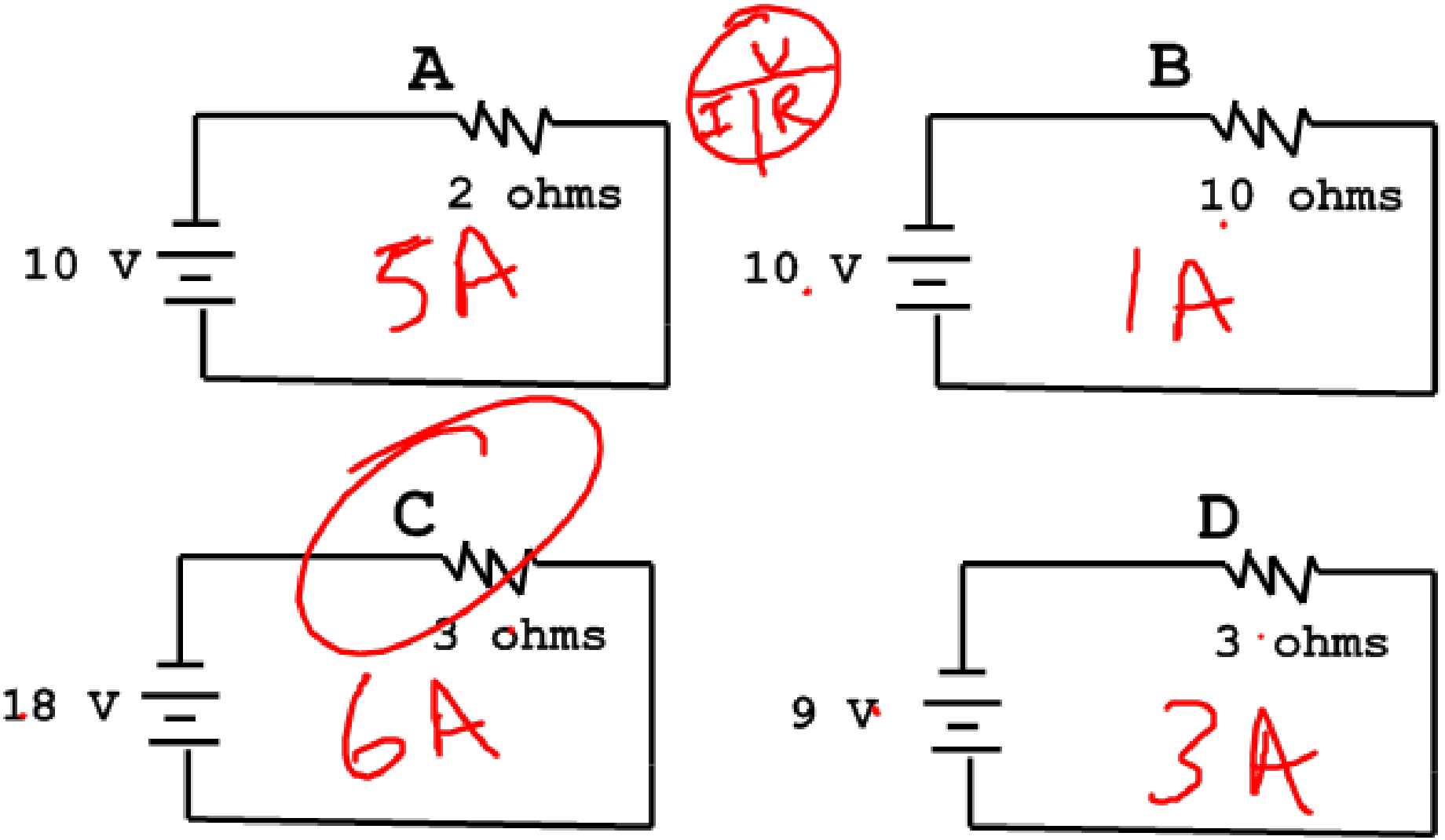
V	10
I	R 5



Find Current:

$I = 2A$

Which has the most current?



Charging objects:

Remember: Objects(and atoms) become charged by gaining or losing electrons.

--Lose electrons, becomes +

--Gain electrons, becomes -

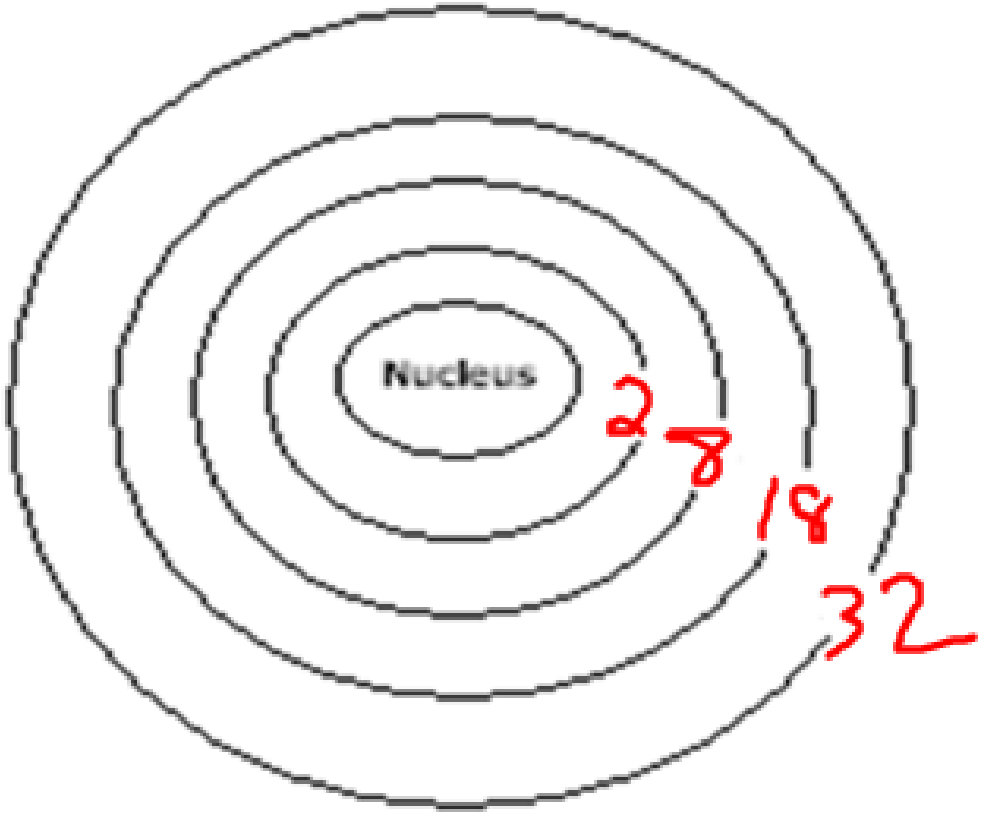
a) +, by gaining protons

b) +, by losing protons

c) -, by gaining electrons

d) +, by losing electrons

Atom Stuff

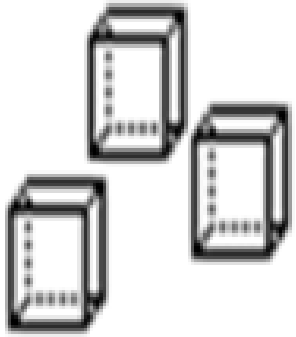


What goes where?

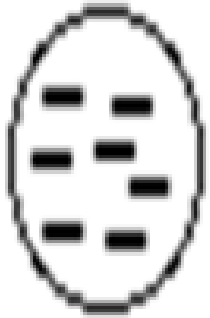
Protons and Neutrons inside nucleus

Electrons outside nucleus

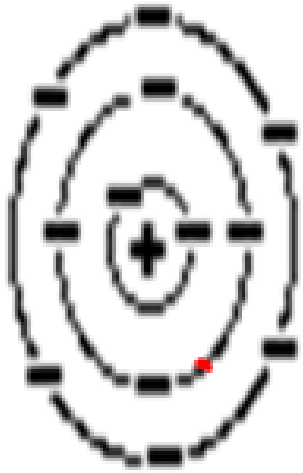
Rutherford
--discovered Nucleus
--Gold Foil Experiment



Dalton

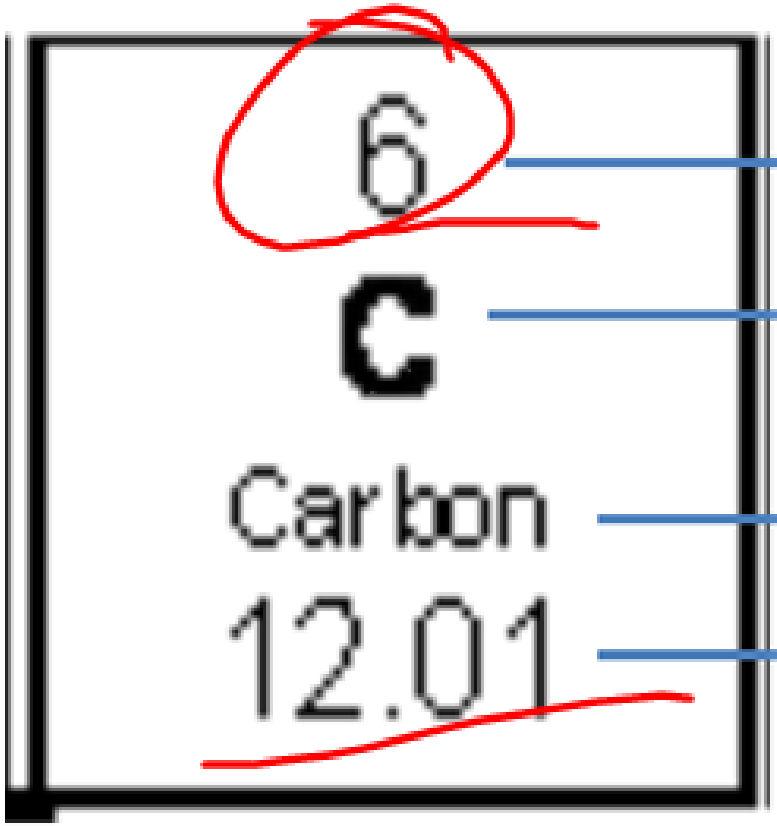


Thomson
--Plum Pudding
--discovered electrons



Bohr
--Planetary Model
--orbitals

If this is something you need to write on your formula sheet, then write it!!
--Also Know What Each Represents(write it also if you need to)!!



Atomic Number (# of protons)

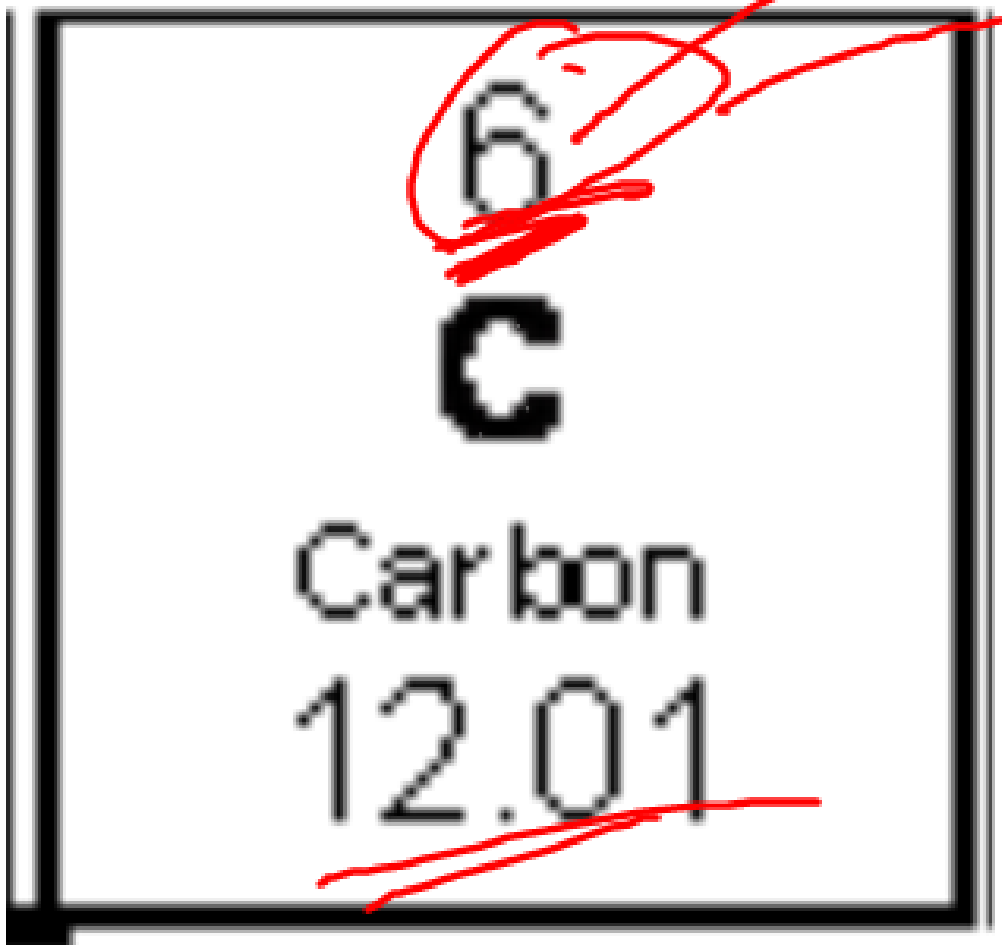
Chemical Symbol

Element

Average Atomic Mass

(round it to get Mass #)

protons + neutrons



1. How many protons does Carbon have?

6

2. How many neutrons does carbon have?

12 - 6 = 6

3. How many electrons does carbon have?

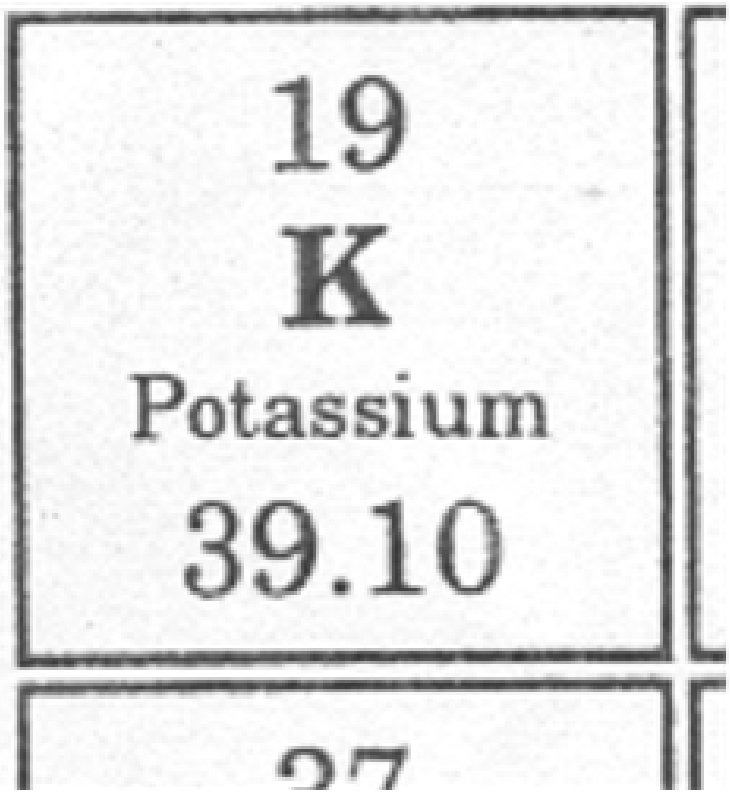
6 same as protons

4. How many electons are in the 1st energy level of a carbon atom?

2

5. How many electrons are in the 2nd energy level of a carbon atom?

4 only 6 total



How many electrons are in the 3rd energy level of Potassium?

2 - 8 - 9

1st 2nd 3rd

Types of Chemical Reactions:

1. **Synthesis** $2Fe + O_2 \longrightarrow 2FeO$

2. **Decomposition** $H_2CO_3 \longrightarrow CO_2 + H_2O$

3. **Single Replacement**

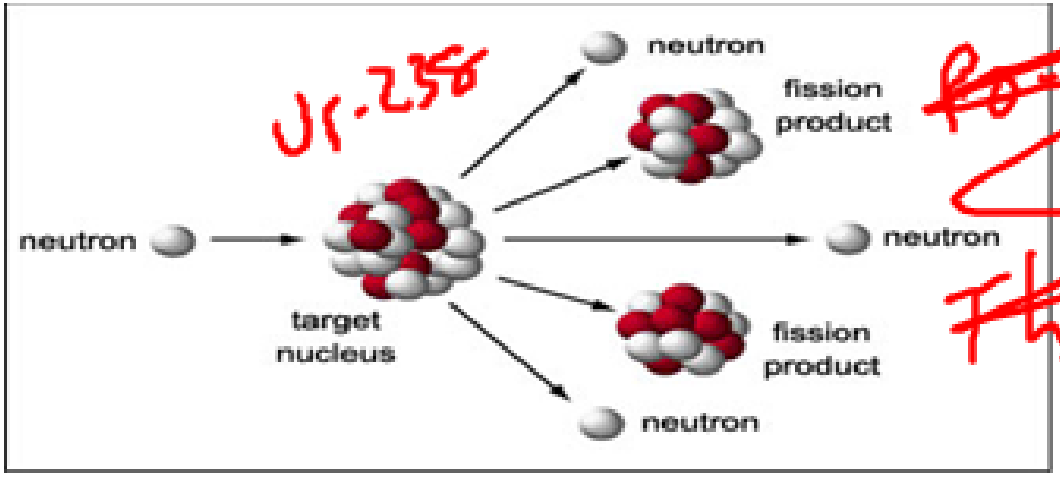
$Mg + 2HCl \longrightarrow H_2 + MgCl_2$

4. **Double Displacement**

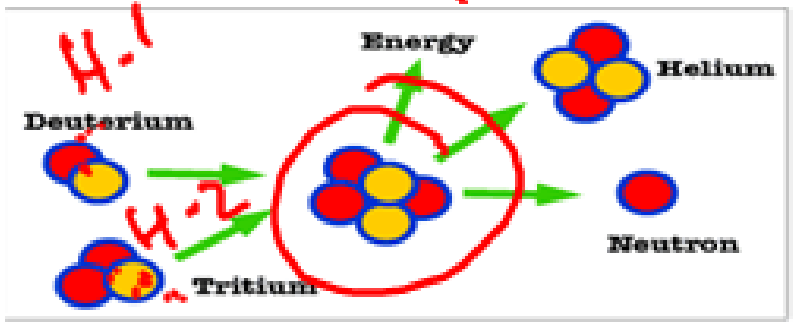
$2KI + Pb(NO_3)_2 \longrightarrow PbI_2 + 2KNO_3$

Types of Nuclear Reactions:
--involve only the nucleus

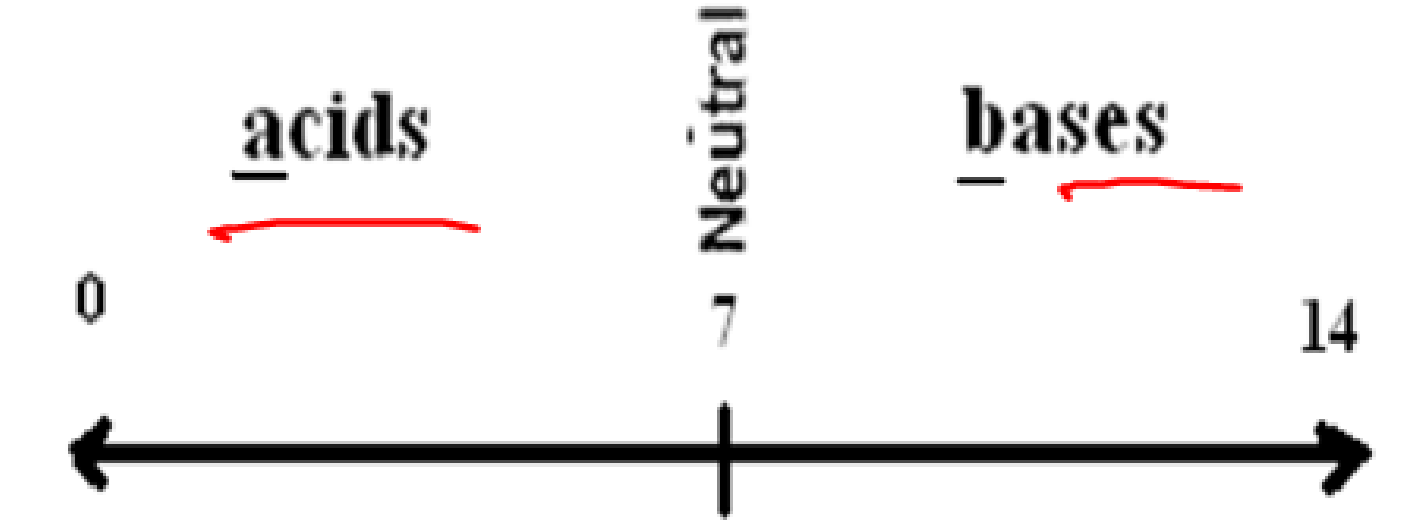
1. Nuclear Fission(Big to small)



2. Nuclear Fusion(small to big)

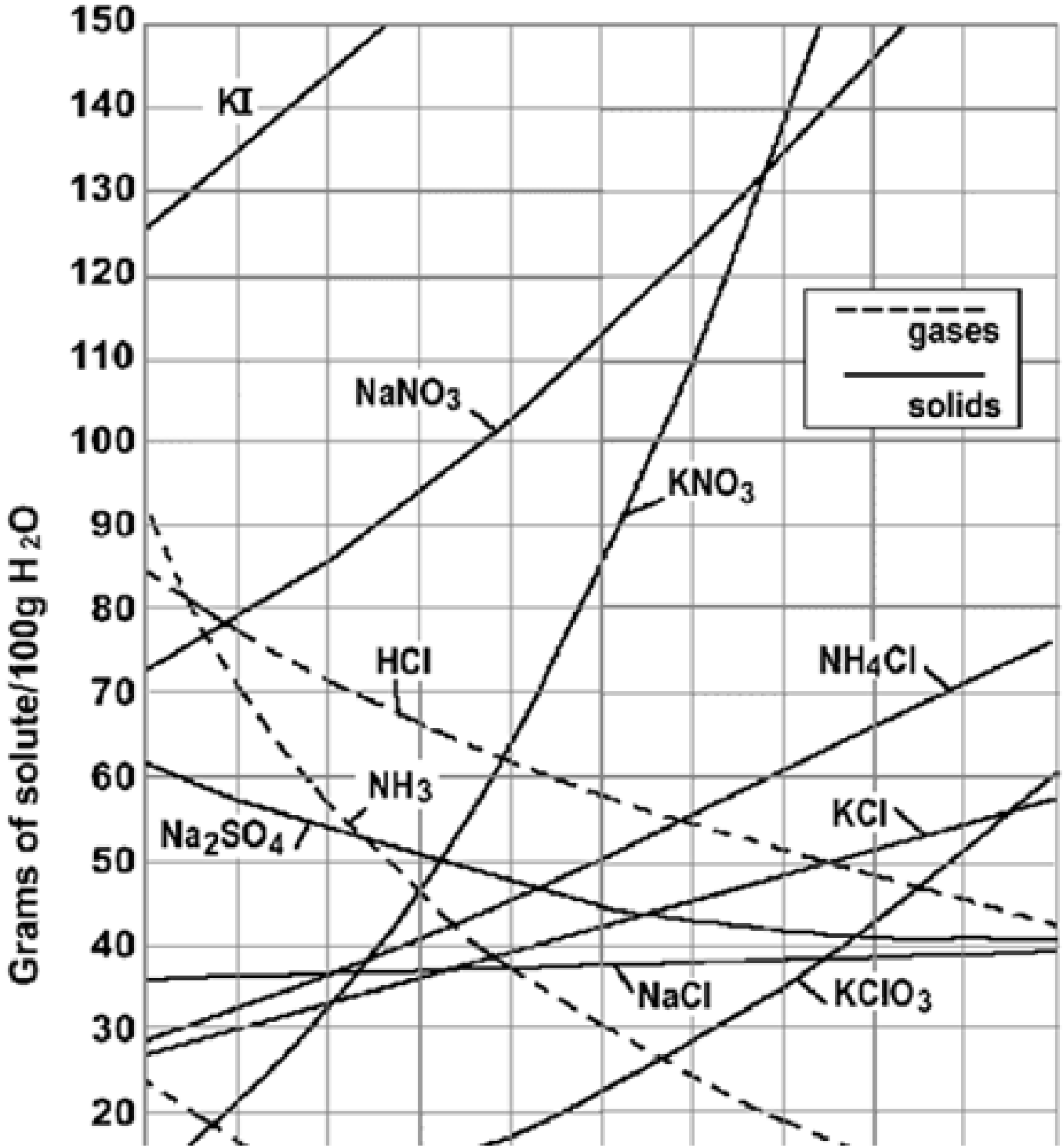


Acids and Bases:



--turn pH paper pink
--taste sour

--turn pH paper blue
--taste bitter


Grams of solute/100g H_2O
150
140
130
120
110
100
90
80
70
60
50
40
30
20
KI
$NaNO_3$
KNO_3
HCl
NH_4Cl
NH_3
KCl
Na_2SO_4
NaCl
$KClO_3$
gases
solids