Activity

**Digits that are significant:**1. Nonzero integers
2. Captive zeros
3. Zeros after integers when decimal point present

Multiply or Divide: Your answer has the same # of SF as the FEWEST SF of your measurements.

Add or Subtract: Your answer can only have as many DECIMAL PLACES as the lowest # of decimal places of your measurements.

**Molecular Geometry**(shapes and bond angle)

Linear 180◦

Trigonal Planar 120◦

Bent <120◦

Tetrahedral 109.5◦

Trigonal Pyramidal 107◦

Bent 104.5◦

Trigonal Bipyramidal

120◦ & 90◦

Octahedral 90◦

**Equations & Constants**% error = [(experimental – accepted/accepted]\*100 % yield = (actual /theoretical)\*100
D = m/V Dwater = 1.0 g/mL 1 mL = 1 cm3
Q = mc∆T cwater = 4.184 J/goC cice = 2.1 J/goC Hfusion = 334 J/g Hvap = 2260 J/g
c = λν E = hν c = 3.0 x 108 m/s h = 6.626 x 10-34 Js 1Hz = 1/sec = s-1
PV = nRT Standard Press = 1 atm = 101.3 kPa = 760 mmHg = 760 torr = 1.01324 x 105 Pa
R = 0.0821 Latm/molK Standard Temp = 273K = 0oC K=oC+273Avogadro’s Number = 6.022 x 1023 Molar Volume of a gas @ STP = 22.4 L/mo
M = mol/L M1V1 = M2V2 ****
pH = -log[H+] [H+] = 10-pH pOH =-log[OH-] pH + pOH = 14

[H+] x [OH-] = 1.0 x 10-14M2

**Solubility Rules**

Group 1A or NH4+ +Any ion Soluble
NO3-, C2H3O2- +Any ion Soluble
ClO4-, ClO3-, ClO2-, ClO- +Any ion Soluble
Cl-, Br-, I- **+Ag+, Pb2+, Hg22+, Cu+ Not Soluble** +Any other ion Soluble
SO42- **+Ca2+, Sr2+, Ba2+, Ra2+ Ag+, Pb2+ Not Soluble** +Any other ion Soluble
PO43-, CO32-, SO32-, CrO42- +Group 1A or NH4+ Soluble
 **+Any other ion**  **Not Soluble**
OH-, S2- +Group 1A, NH4+, Ca2+, Sr2+, Ba2+ Soluble
 **+Any other ion Not Soluble**

 **Common Compound Names/Formulas**ammonia (NH3)

hydrogen peroxide (H2O2)
vinegar/acetic acid (HC2H3O2 or CH3COOH)
baking soda/sodium bicarbonate (NaHCO3)
sucrose/sugar (C12H22O11)
glucose (C6H12O6)
methane (CH4)
propane (C3H8)
butane (C4H10)
octane (C8H18)

**Transition Metal Charges**cadmium +2,
chromium +2, +3
cobalt +2, +3
copper +1, +2
iron +2, +3
lead +2, +4
manganese +2, +3, +4
mercury +1(Hg2), +2
nickel +2, +3
zinc +2
silver +1
tin +2, +4

 **Polyatomic Ions
ammonium NH4+**acetate C2H3O2- or CH3COO-bromate BrO3-
carbonate CO32-
chlorate ClO3-
chlorite ClO2-
**cyanide CN-**chromate CrO42-
dichromate Cr2O72-**hydroxide OH-**
hypochlorite ClO-
nitrate NO3-
nitrite NO2-

oxalate C2O42-
perchlorate ClO4-
permanganate MnO4-
**peroxide O22-**
phosphate PO43-
phosphite PO33-
sulfate SO42-
sulfite SO32-
hydrogen phosphate HPO42-
hydrogen sulfite (bisulfite) HSO3-
hydrogen sulfate (bisulfate) HSO4-
hydrogen carbonate (bicarbonate) HCO3-

Li
K

Ba
Ca
Na
Mg
Al
Zn
Cr
Fe

Cd

Co
Ni
Sn
Pb **H**
Cu
Hg
Ag
Pt
Au

**Activity Series of Metals**

 **Metric Prefixes**mega (M) 1,000,000m=1Mm
kilo (k) 1000m=1km
centi (c) 100cm=1m
milli (m) 1000mm=1m
micro (µ) 106 μm=1m
nano (n) 109 nm=1m

pico (p) 1012 pm = 1m