SCH3U
Mrs. Uehling

Name_____

Reaction Prediction

Directions:

State the type of reaction. (synthesis, decomposition, single displacement, double displacement)
Complete and balance each equation if it occurs.
If it doesn't occur state why.

1. potassium + iodine ➔

2. zinc + lead (II) chloride ➔

3. silver nitrate + hydrogen sulfide ➔

4. zinc sulfide + hydrochloric acid ➔

5. lithium oxide + water ➔

6. calcium hydroxide + nitric acid ➔

7. calcium carbonate + heat ➔

8. sulfur dioxide + water ➔

9. silver + barium ➔

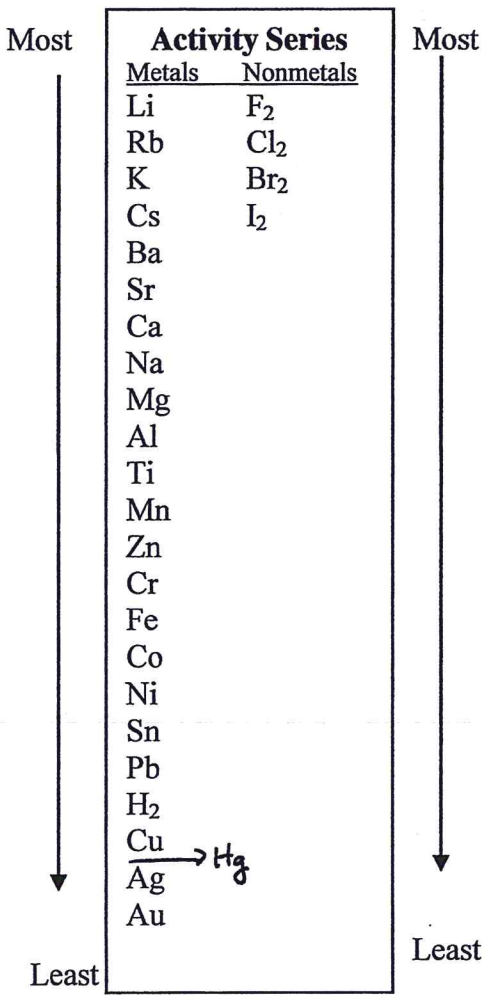
10. carbonic acid + heat ➔

Table 1 Solubility of Ionic Compounds at Room Temperature

Solubility	Ion	Exceptions
very soluble (aq) ≥ 0.1 mol/L	NO_3^-	none
	Cl^- and other halides	except with Cu^+, Ag^+, Hg_2^{2+}, Pb^{2+}
	SO_4^{2-}	except with Ca^{2+}, Ba^{2+}, Sr^{2+}, Hg^{2+}, Pb^{2+}, Ag^+
	$C_2H_3O_2^-$	Ag^+
	Na^+ and K^+	none
	NH_4^+	none
slightly soluble (s) < 0.1 mol/L	CO_3^{2-}	except with Group 1 ions and NH_4^+
	PO_4^{3-}	except with Group 1 ions and NH_4^+
	OH^-	except with Group 1 ions, Ca^{2+}, Ba^{2+}, Sr^{2+}
	S^{2-}	except with Groups 1 and 2 ions and NH_4^+

Table 2 IUPAC Names and Formulas for Some Common Polyatomic Ions

Name	Formula
acetate	$C_2H_3O_2^-$
bromate	BrO_3^-
carbonate	CO_3^{2-}
hydrogen carbonate	HCO_3^-
hypochlorite	ClO^-
chlorite	ClO_2^-
chlorate	ClO_3^-
perchlorate	ClO_4^-
chromate	CrO_4^{2-}
dichromate	$Cr_2O_7^{2-}$
cyanide	CN^-
hydroxide	OH^-
iodate	IO_3^-
permanganate	MnO_4^-
nitrite	NO_2^-
nitrate	NO_3^-
phosphate	PO_4^{3-}
hydrogen phosphite	HPO_3^{2-}
hydrogen phosphate	HPO_4^{2-}
dihydrogen phosphite	$H_2PO_3^-$
dihydrogen phosphate	$H_2PO_4^-$
sulfite	SO_3^{2-}
sulfate	SO_4^{2-}
hydrogen sulfide	HS^-
hydrogen sulfite	HSO_3^-
hydrogen sulfate	HSO_4^-
thiosulfate	$S_2O_3^{2-}$
ammonium	NH_4^+



Periodic table of the elements

(Link to French version)

with combining capacity

(Scroll down for printer friendly version)

I	II											III A	IV A	V A	VI A	VII A	0
1 +1 **H** -1 1.008 Hydrogen																	2 **He** 4.003 Helium
3 +1 **Li** 6.939 Lithium	4 +2 **Be** 9.012 Beryllium											5 +3 **B** 10.81 Boron	6 +4 **C** 12.01 Carbon	7 -3 **N** 14.01 Nitrogen	8 -2 **O** 16.00 Oxygen	9 -1 **F** 19.00 Fluorine	10 **Ne** 20.18 Neon
11 +1 **Na** 22.99 Sodium	12 +2 **Mg** 24.31 Magnesium	III A	IV B	V B	VI B	VII B	VIII	VIII	VIII	I B	II B	13 +3 **Al** 26.98 Aluminum	14 +4 **Si** 28.09 Silicon	15 -3 **P** 30.97 Phosphorus	16 -2 **S** +4 32.06 +6 Sulfur	17 -1 **Cl** 35.45 Chlorine	18 **Ar** 39.95 Argon
19 +1 **K** 39.10 Potassium	20 +2 **Ca** 40.08 Calcium	21 +3 **Sc** 44.96 Scandium	22 +2 **Ti** +3 47.90 +4 Titanium	23 +2 **V** +3 50.94 +4 Vanadium +5	24 +2 **Cr** +3 52.00 Chromium	25 +2 **Mn** +3 54.94 Manganese	26 +2 **Fe** +3 55.85 Iron	27 +2 **Co** +3 58.93 Cobalt	20 +2 **Ni** +3 58.71 Nickel	29 +1 **Cu** +2 63.55 Copper	30 +2 **Zn** 65.38 Zinc	31 +3 **Ga** 69.72 Gallium	32 +4 **Ge** 72.59 Germanium	33 -3 **As** +5 74.92 Arsenic	34 -2 **Se** +4 78.96 +6 Selenium	35 -1 **Br** 79.91 Bromine	36 **Kr** 83.80 Krypton
37 +1 **Rb** 85.47 Rubidium	38 +2 **Sr** 87.62 Strontium	39 +3 **Y** 88.91 Yttrium	40 +4 **Zr** 91.22 Zirconium	41 +3 **Nb** +5 92.91 Niobium	42 +2 **Mo** +3 95.94 Molybdenum	43 +7 **Tc** 98.91 Technetium	44 +3 **Ru** +4 101.1 Ruthenium	45 +3 **Rh** +4 102.9 Rhodium	45 +2 **Pd** +4 106.4 Palladium	47 +1 **Ag** 107.9 Silver	48 +2 **Cd** 112.4 Cadmium	49 +3 **In** 114.8 Indium	50 +2 **Sn** +4 118.7 Tin	51 -3 **Sb** +5 121.8 Antimony	52 -2 **Te** +4 127.6 +6 Tellurium	53 -1 **I** 126.9 Iodine	54 **Xe** 131.3 Xenon
55 +1 **Cs** 132.9 Cesium	56 +2 **Ba** 137.3 Barium	71 +3 **Lu** 175.0 Lutetium	72 +4 **Hf** 178.5 Hafnium	73 +5 **Ta** 180.9 Tantalum	74 +6 **W** 183.9 Tungsten	75 +4 **Re** +7 186.2 Rhenium	76 +3 **Os** +4 190.2 Osmium	77 +3 **Ir** +4 192.2 Iridium	78 +2 **Pt** +4 195.1 Platinum	79 +1 **Au** +3 197.0 Gold	80 +1 **Hg** +2 200.6 Mercury	81 +1 **Tl** +3 204.4 Thallium	82 +2 **Pb** +4 207.2 Lead	83 -3 **Bi** +5 209.0 Bismuth	84 +2 **Po** +4 (209) Polonium	85 -1 **At** (210) Astatine	86 **Rn** (222) Radon
87 +1 **Fr** (223) Francium	88 +2 **Ra** 226.0 Radium	103 +3 **Lr** (262) Lawrencium	104 **Rf** 261.11 Rutherfordium	105 **Db** 262.11 Dubnium	106 **Sg** 263.12 Seaborgium	107 **Bh** 262.12 Bohrium	108 **Hs** (265) Hassium	109 **Mt** (266) Meitnerium	110 **Ds** (281) Darmstadtium	111 **Rg** (272) Roentgenium	112 **Uub** (285) Ununbium	113 **Uut** (284) Ununtrium	114 **Uuq** (289) Ununquadium	115 **Uup** (288) Ununpentium	116 **Uuh** (292) Ununhexium		118 **Uuo** (293) Ununoctium
		57 +3 **La** 138.9 Lanthanum	58 +3 **Ce** +4 140.01 Cerium	59 +3 **Pr** +4 140.9 Praseodymium	60 +3 **Nd** 144.2 Neodymium	61 +3 **Pm** (145) Promethium	62 +2 **Sm** +4 150.4 Samarium	63 +2 **Eu** +3 152.0 Europium	64 +3 **Gd** 157.3 Gadolinium	65 +3 **Tb** +4 158.9 Terbium	66 +3 **Dy** 162.5 Dysprosium	67 +3 **Ho** 164.9 Holmium	68 +3 **Er** 167.3 Erbium	69 +2 **Tm** +3 168.9 Thulium	70 +2 **Yb** +3 173.0 Ytterbium		
		89 +3 **Ac** (227) Actinium	90 +4 **Th** 232.0 Thorium	91 +4 **Pa** +5 (231) Protactinium	92 +4 **U** +5 238.03 +6 Uranium	93 +3 **Np** +4 (237) +5 +6 Neptunium	94 +3 **Pu** +4 (244) +5 +6 Plutonium	95 +3 **Am** +4 (243) +5 +6 Americium	96 +3 **Cm** (247) Curium	97 +3 **Bk** +4 (247) Berkelium	98 +3 **Cf** (251) Californium	99 +3 **Es** (252) Einsteinium	100 +3 **Fm** (257) Fermium	101 +2 **Md** +3 (258) Mendelevium	102 +2 **No** +3 (259) Nobelium		

Colour legend:

Alkali metals
Alkaline earth metals
Transition metals
Other metals
Non-metals
Halogens
Noble gases
Lanthanides
Actinides

Polyatomic ions

(CNDS BC P PHANS)

ClO_3^{-1}	= chlorate	NO_3^{-1}	= nitrate
$Cr_2O_7^{-2}$	= dichromate	SO_4^{-2}	= sulphate
HCO_3^{-1}	= bicarbonate	CO_3^{-2}	= carbonate
PO_4^{-3}	= phosphate	PO_3^{-3}	= phosphite
OH^{-1}	= hydroxide	NH_4^{+1}	= ammonium
NO_2^{-1}	= nitrite	SO_3^{-2}	= sulfite