

### 1) Names and symbols of the following elements

Al	Aluminum	Mg	Magnesium
Ar	Argon	Mn	Manganese
Ba	Barium	Hg	Mercury
Be	Beryllium	Ne	Neon
B	Boron	Ni	Nickel
Br	Bromine	N	Nitrogen
Ca	Calcium	O	Oxygen
C	Carbon	P	Phosphorus
Cl	Chlorine	Pt	Platinum
Cr	Chromium	K	Potassium
Co	Cobalt	Sc	Scandium
Cu	Copper	Si	Silicon
F	Fluorine	Ag	Silver
Au	Gold	Na	Sodium
He	Helium	S	Sulfur
H	Hydrogen	Ti	Titanium
I	Iodine	U	Uranium
Fe	Iron	V	Vanadium
Pb	Lead	Zn	Zinc
Li	Lithium		

### 2) Table SI prefix multipliers and symbols

(common Mega (M) to nano (n))

Table 1.1

Mass, length, volume, time, temperature, quantity of substance, energy

### 3) Formulas for

- 1) density
- 2) percent
- 3) temperature conversion between C and K

### 4) Atomic/Subatomic Particles

- Alpha  $\alpha$  or  ${}^4\alpha$  or  ${}^4\text{He}$  or  ${}^4_2\alpha$
- Beta  $\beta$  or  $\beta^-$  or  ${}^0_{-1}\beta$
- Gamma  $\gamma$  or  ${}^0_0\gamma$
- Positron  $\beta^+$  or  ${}^0_1\beta$
- Proton  ${}^1_1p$
- Neutron  ${}^1_0n$
- Electron  ${}^0_{-1}e$
- Deuterium  ${}^2_1H$  or  ${}^2_1D$
- Tritium  ${}^3_1H$  or  ${}^3_1T$

### 5) Groups on the periodic table

Metals

Transition metals

Alkaline earth metals

Nonmetals

Noble gases

Halogens

Metalloids

Alkali metals

## 6) Polyatomic Ions:

$C_2H_3O_2^-$	acetate	$SO_4^{2-}$	sulfate
$NH_4^+$	ammonium	$Hg_2^{2+}$	mercury(I)
$CO_3^{2-}$	carbonate	$SO_3^{2-}$	sulfite
$HCO_3^-$	bicarbonate	$HSO_4^-$	bisulfate
$ClO_4^-$	perchlorate	$HSO_3^-$	bisulfite
$ClO_3^-$	chlorate	$NO_3^-$	nitrate
$ClO_2^-$	chlorite	$NO_2^-$	nitrite
$ClO^-$	hypochlorite	$CrO_4^{2-}$	chromate
$PO_4^{3-}$	phosphate	$Cr_2O_7^{2-}$	dichromate
$CN^-$	cyanide	$SCN^-$	thiocyanate
$OH^-$	hydroxide	$MnO_4^-$	permanganate

## 7) Basic organic compounds (simple alkanes)

$CH_4$  = methane

$C_2H_6$  = ethane

$C_3H_8$  = propane

$C_4H_{10}$  = butane

$C_5H_{12}$  = pentane

## 8) Covalent prefixes

Mono (1) to Deca (10) (table 4.4)

## 9) Strong acids

HCl = hydrochloric acid

HBr = hydrobromic acid

HI = hydroiodic acid

$HClO_4$  = perchloric acid

$HNO_3$  = nitric acid

$H_2SO_4$  = sulfuric acid

## 10) solubility rules

a) all compounds containing the following ions are soluble in water:

group 1 ions, ammonium ion, nitrate ion, acetate ion and perchlorate ion

b) compounds containing the following ions are usually soluble, common exceptions are noted

group 17 ions (halides)

unless the cation is:  $Ag^+$ ,  $Cu^+$ ,  $Hg_2^{2+}$  or  $Pb^{2+}$ , in which case it is NOT soluble

sulfate ion

unless the cation is:  $Ba^{2+}$ ,  $Ca^{2+}$ ,  $Hg^{2+}$ ,  $Pb^{2+}$  or  $Sr^{2+}$ , in which case it is NOT soluble

c)  $Ca(OH)_2$ ,  $Sr(OH)_2$  and  $Ba(OH)_2$  are soluble.