Progress Quiz

① How many sig figs are in each of the following?

a) 0.0050 — 2 SF

b) 81,900. — 5 SF

c) 0.6071 — 4 SF

② Silver ($Z = 47$) has two naturally-occuring isotopes: ^{107}Ag and ^{109}Ag. Calculate the atomic mass of Ag given the following:

Isotope	Mass (AMU)	Abundance
^{107}Ag	106.90509	51.84%
^{109}Ag	108.90476	48.16%

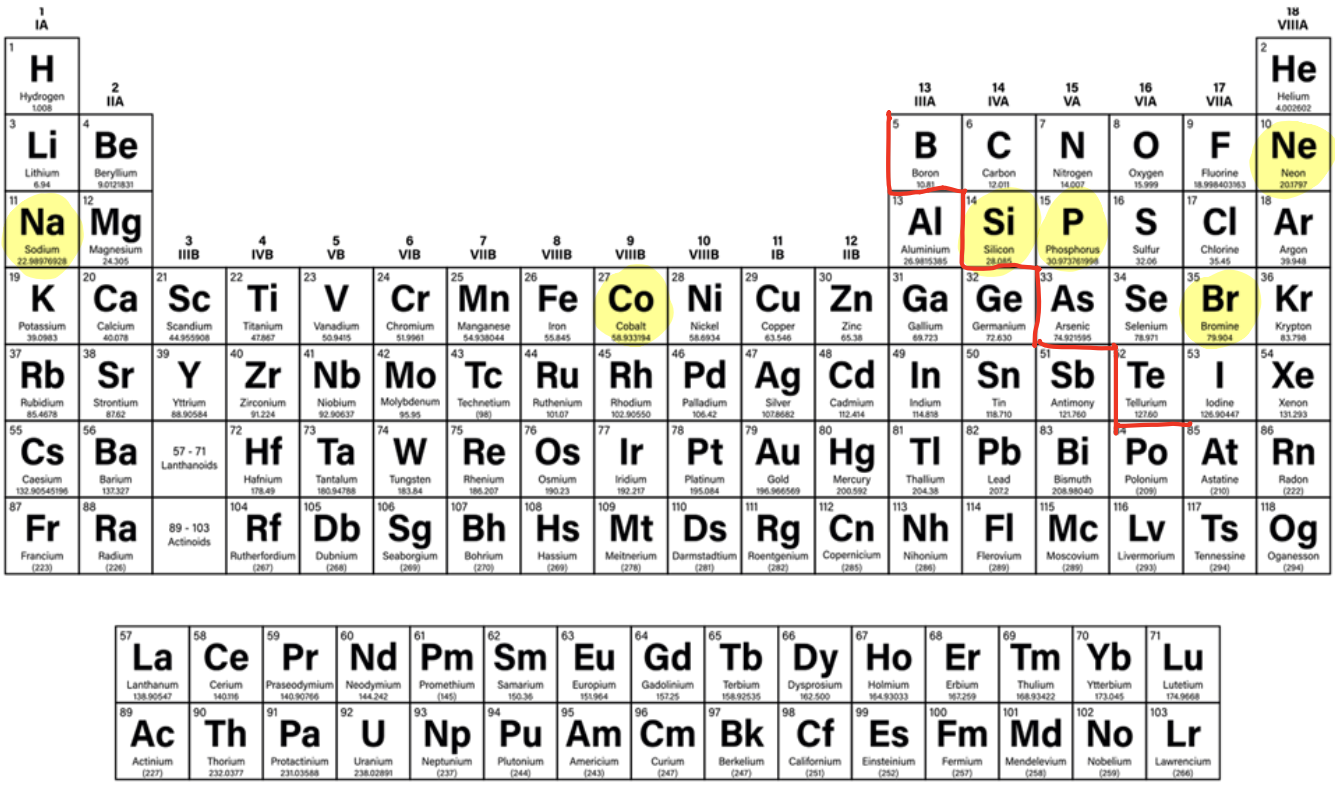
$.5184\,(106.90509) = 55.42$ amu

$.4816\,(108.90476) = 52.45$ amu

$55.42 + 52.45 = 107.87$ amu

③ Look at the positions of the following elements on the periodic table:

Silicon, Phosphorus, Cobalt, Neon, Bromine, Sodium



Co a) which is a transition metal?

Ne b) which is a noble gas?

Si c) which is a metalloid?

Br d) which is a halogen?

④ Name the following anions, then give the name and formula of the acid derived from each:

a) Cl^- chloride

b) CN^- cyanide

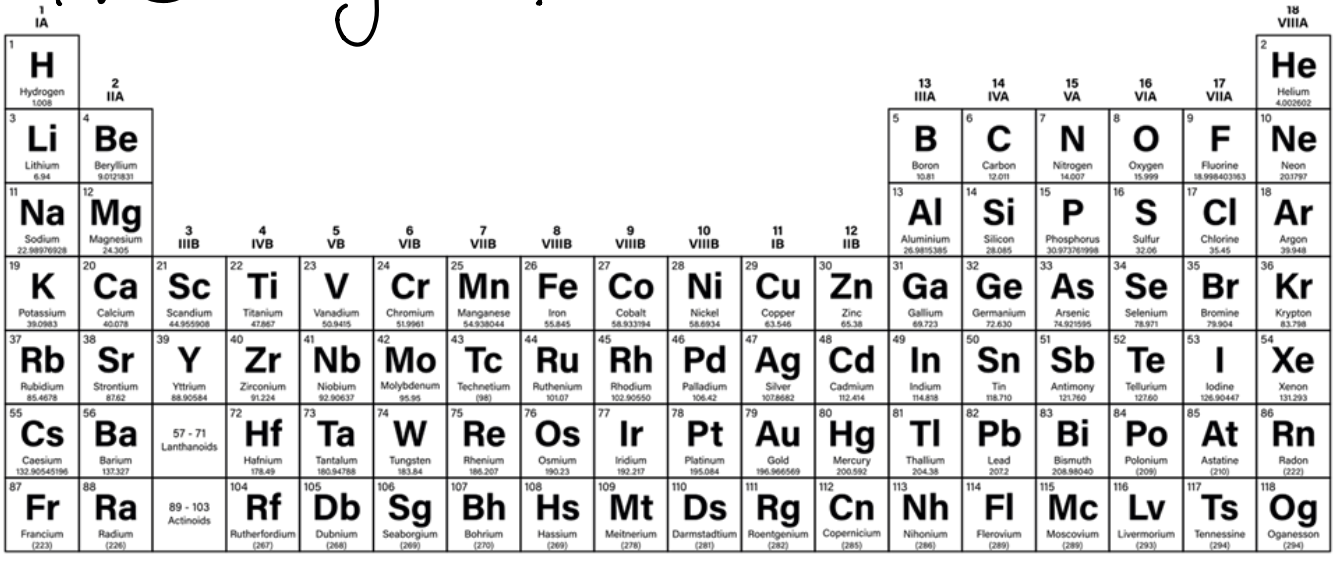
c) SO_4^{2-} sulfate

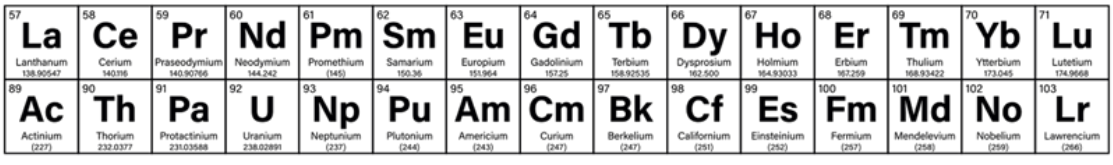
$HCl \rightarrow$ hydrochloric acid

$HCN \rightarrow$ hydrocyanic acid

$H_2SO_4 \rightarrow$ sulfuric acid

(5) Nitrogen dioxide is found in car exhaust. How many nitrogen dioxide molecules are found in an 8.92 g sample of the gas?





NO_2

$$MM_{NO_2} = MM_{1N} + MM_{2O}$$

$$= 14.01 \frac{g}{mol} + 2(16) \frac{g}{mol}$$

$$= 46.01 \frac{g}{mol}$$

$$\text{Mols } NO_2 = \frac{8.92\,g \mid 1\ mol}{46.01\,g} = 0.194 \text{ mols } NO_2$$

Molecs NO_2 = $\frac{0.194 \text{ mols} \mid 6.022 \times 10^{23} \text{ molecs}}{1 \text{ mol}}$

$= 1.17 \times 10^{23}$ NO_2 molecules

Given mass of NO_2

↓

mols of NO_2

↓

Avagadro's #

↓

# of molecules of NO_2 in the sample

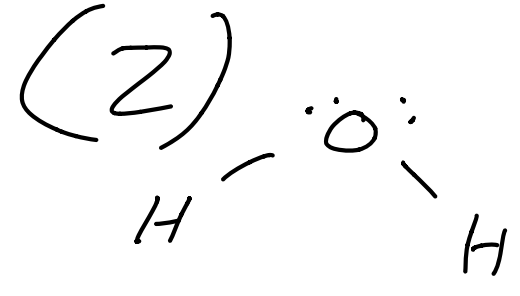
$$\text{Density} = \frac{\text{mass}}{\text{volume}} = 2.14 \frac{\text{kg}}{\text{L}}$$

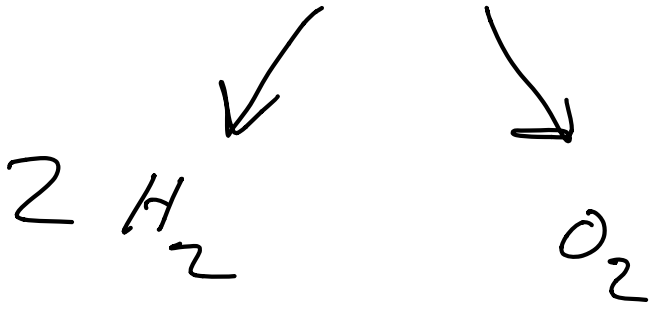
$$\frac{\text{g}}{\text{cm}^3}$$

180 g Glucose + 192 g oxygen → 264 g CO_2 + 108 g water

372 g = 372 g

H_2O





$^{14}_{6}C$

$^{12}_{6}C \rightarrow 12$ amu

$12 \frac{g}{mol}$

$A + B \rightarrow C$

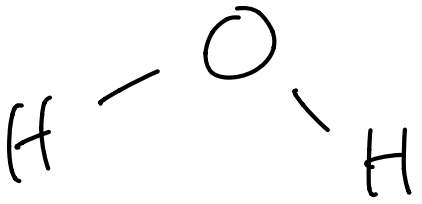
$^{A}_{Z}X$

Ca^{2+} Br^{-}

$CaBr_2$

H_2O

H : O : H



$$\frac{2.82\ g\ Na}{} \left| \frac{1\ mol\ Na}{22.99\ g\ Na} \right. = \frac{.123\ mol}{.123}$$

$$\frac{4.35\ g\ Cl}{} \left| \frac{1\ mol\ Cl}{35.45\ g\ Cl} \right. = \frac{.123\ mol}{.123}$$

$$\frac{7.83\ g\ O}{} \left| \frac{1\ mol\ O}{16.00\ g\ O} \right. = \frac{.489\ mol}{.123}$$

$Na_1 Cl_1 O_4 = NaClO_4$

CH_2O EF

$C_3H_6O_3$ MF