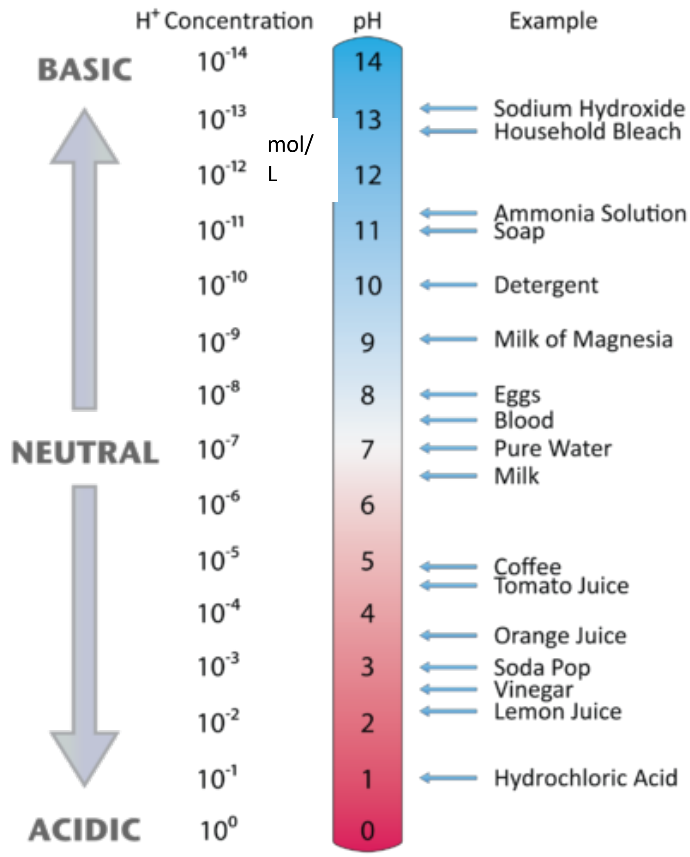
HW24

pH scale (the measure of acidity, in other words the measure of proton concentration in solutions).




**Questions**

1.
Classify the following as oxides, acids, bases, salts:
$MgO$, $NaCl$, $MgCl_2$, $CO_2$, $Al_2O_3$, $H_2SO_4$, $HBr$, $CaSO_4$, $KOH$, $Mg(OH)_2$

2.
Arrange the following in order of increasing pH:

0.01 mol/L HCl
1 mol/L NaOH
0.1 mol/L $H_2SO_4$

3. We mix 10 ml of a 0.2 M (concentration 0.2 mol/L) solution of $K_3PO_4$ with 40 ml of a 0.1 M (0.1 mol/L) solution of $K_2SiO_3$ and 50 ml of a 0.2 M (0.2 mol/L ) solution of KCl, then we add 400 ml of water. What is the molar concentration of potassium ion, $K^+$ in the final solution?

1st step to solve the problem: we have the molar concentration of the potassium salts, we have to figure out the molar concentration of $K^+$ from each compound.
Molar concentration of $K_3PO_4$ is 0.2 mol/L. One molecule of potassium phosphate has 3 atoms of K, so the **molar concentration of $K^+$** in the 10 ml of a 0.2 M solution of potassium phosphate is 0.2x3=**0.6 mol/L.**
Molar concentration of $K_2SiO_3$ is 0.1 mol/L. One molecule of potassium silicate has 2 atoms of K, so the **molar concentration of $K^+$** in the 40 ml of a 0.1 M solution of potassium silicate is 0.1x2=**0.2 mol/L.**
Molar concentration of KCl is 0.2 mol/L. One molecule of KCl has 1 atom of K, so the **molar concentration of $K^+$** in the 50 ml of a 0.2 M solution of potassium chloride is **0.2 mol/L.**

**Continue to solve the problem from here.**