Electrolytes, Nonelectrolytes, and Ion Concentrations in Solution

Indicate if the following acids are strong or weak acids

HI	HBr	CH_3COOH
Strong	Strong	Weak
$HMnO_4$	$HClO_3$	HClO
Weak	Strong	Weak

Indicate if the following are strong electrolytes, weak electrolytes, or nonelectrolytes.

HNO_3	NaCl	H_2SO_3
Strong	Strong	Weak
CH_3CH_2OH	NH_3	NH_4Cl
Nonelectrolyte	Weak	Strong
HNO_2	CH_3COOH	HF
Weak	Weak	Weak

How many moles of each ion are in each of the following aqueous solutions?

0.45 M $MgBr_2$

$MgBr_2 \xrightarrow{H_2O} Mg^{2+} + 2\ Br^-$

0.45 mol Mg^{2+} and 2 x 0.45 mol Br^- = **0.90 mol Br^-**

There is a total of 0.45 mol + 0.90 mol = 1.35 mol of ions

3.2 M Na_2SO_4

$Na_2SO_4 \xrightarrow{H_2O} 2\ Na^+ + SO_4^{2-}$

2 x 3.2 mol Na^+ = **6.4 mol Na^+** and **3.2 mol SO_4^{2-}**

Total # mols = 6.4 mol Na^+ + 3.2 mol SO_4^{2-} = 9.6 mols of ions

0.75 M RbCl

$RbCl \xrightarrow{H_2O} Rb^+ + Cl^-$

0.75 mol Rb^+ and **0.75 mol Cl^-**

Total # mols = 0.75 mol Rb^+ + 0.75 mol Cl^-= 1.50 mol ions

0.28 M $Ca_3(PO_3)$

$Ca_3(PO_4)_2 \xrightarrow{H_2O} 3\ Ca^{2+} + 2\ PO_4^{3-}$

3 x 0.28 mol Ca^{2+} = **0.84 mol Ca^{2+}**

2 x 0.28 mol PO_4^{3-} = **0.56 mol PO_4^{3-}** Total mols = 1.4 mol ions