WRITING NET IONIC EQUATIONS

How to write a net ionic equation.

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1. START WITH A BALANCED CHEMICAL EQUATION

 $2NaI(aq) + Pb(NO_3)_2(aq) -> 2NaNO_3(aq) + PbI_2(s)$

2. WRITE OUT THE COMPLETE IONIC EQUATION

A. ANY SUBSTANCE DESCRIBED AS

AQUEOUS (AQ) CAN BE SEPARATED INTO ITS COMPONENT IONS.

B. ANY SUBSTANCE THAT IS NOT AQUEOUS (S) OR (L) CANNOT BE SEPARATED INTO IONS. C. IF SUBSTANCES DO NOT HAVE THESE DESIGNATIONS, YOU MUST USE SOLUBILITY RULES TO DETERMINE WHAT IS AQUEOUS AND WHAT IS INSOLUBLE

In the given example from the previous slide, the complete ionic equation would be:

 $2 \operatorname{Na}^{1+}(aq) + 2 \operatorname{I}^{1-}(aq) + \operatorname{Pb}^{2+}(aq) + 2 \operatorname{NO}_{3}^{1-}(aq) \rightarrow \operatorname{PbI}_{2}(s) + 2 \operatorname{Na}^{1+}(aq) + 2 \operatorname{NO}_{3}^{1-}(aq)$

3. REMOVE THE IONS THAT ARE EXACTLY THE SAME ON BOTH SIDES OF THE EQUATION; THESE ARE SPECTATOR IONS AND DO NOT PARTICIPATE IN THE REACTION. THE RESULTING EQUATION IS THE NET IONIC EQUATION.

 $2 \operatorname{Na}^{1+}(aq) + 2 \operatorname{I}^{1-}(aq) + \operatorname{Pb}^{2+}(aq) + 2 \operatorname{NO}_{3}^{1-}(aq) \rightarrow \operatorname{PbI}_{2}(s) + 2 \operatorname{Na}^{1+}(aq) + 2 \operatorname{NO}_{3}^{1-}(aq)$

4. WRITE OUT THE NET IONIC EQUATION.

 $Pb^{2+}(aq) + 2 I^{1-}(aq) \rightarrow PbI_2(s)$ Be sure that the equation (and charges on both sides) remain balanced.