1.) Label the following as soluble or insoluble

NaNO₃
PbCl₂
CaSO₄
BaCO₃
CaBr₂
NH₄Cl
K₂S

2.) SOLUBILITY RULES

<table>
<thead>
<tr>
<th>SOLUBLE IONIC COMPOUNDS</th>
<th>INSOLUBLE IONIC COMPOUNDS</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Group 1A ions (Li⁺, Na⁺, K⁺, etc.) and Ammonium ion (NH₄⁺) are soluble.</td>
<td>1. (Hydroxides) OH⁻ and (Sulfides) S²⁻ are insoluble except when with Group 1A ions (Li⁺, Na⁺, K⁺, etc.), ammonium ion (NH₄⁺) and Ca²⁺, Sr²⁺, Ba²⁺.</td>
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<tr>
<td>2. (Nitrates) NO₃⁻, (Acetates) CH₃COO⁻ or CaH₂O₄⁻, and most Perchlorates (ClO₄⁻) are soluble.</td>
<td>2. (Carbonates) CO₃²⁻ and (Phosphates) PO₄³⁻ are insoluble except when with Group 1A ions (Li⁺, Na⁺, K⁺, etc.), ammonium ion (NH₄⁺).</td>
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<tr>
<td>3. Cl⁻, Br⁻, and I⁻ are soluble, except when paired with Ag⁺, Pb²⁺, Cu⁺ and Hg²⁺.</td>
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<tr>
<td>4. (Sulfates) SO₄²⁻ are soluble, except those of Ca²⁺, Sr²⁺, Ba²⁺, Ag⁺, and Pb²⁺.</td>
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</tbody>
</table>
2.) Complete the double replacement reaction and then reduce it to the net ionic equation.

NaOH (aq) + MgCl₂ (aq) ---->

Fe(NO₃)₃ (aq) + NaOH (aq) ---->

Al₂(SO₄)₃ (aq) + BaCl₂ (aq) ---->

HI (aq) + Zn(NO₃)₂ (aq) ---->

CaCl₂ (aq) + Na₃PO₄ (aq)