

Balancing Equations Word Problems

Symbols

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- ▶ An arrow separates reactants from products
 - ▶ Read as "reacts to form" or "yields"
- ▶ "And" = +
- ▶ Solid = (s) after formula AgCl (s)
- ▶ Liquid = (l) after formula H₂O (l)
- ▶ Gas = (g) CO₂ (g)
- ▶ Aqueous (dissolved in H₂O) = (aq)
NaCl (aq)

Symbols (cont)

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- ▶ \leftrightarrow = reversible rxn (also seen as \rightleftharpoons)
- ▶ $\xrightarrow{\Delta}$, $\xrightarrow{\text{heat}}$, heat supplied to rxn
- ▶ $\xrightarrow{\text{Pt}}$, indicates catalyst used
 - ▶ Catalyst = substance that speeds up rxn without being changed or used up

Word Problems

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- ▶ Write formulas then balance.
- ▶ Aluminum reacts with oxygen to produce aluminum oxide.
- ▶ $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$
- ▶ Solid copper reacts with aqueous silver nitrate to produce solid silver and aqueous copper (II) nitrate
- ▶ $\text{Cu} (s) + 2\text{AgNO}_3 (aq) \rightarrow \text{Cu}(\text{NO}_3)_2 (aq) + 2\text{Ag} (s)$

Word Problems

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- ▶ Write formulas then balance.
- ▶ Ammonium carbonate and magnesium sulfate react to yield ammonium sulfate and magnesium carbonate
- ▶ Iron plus lead (II) phosphate react forming iron (II) phosphate and lead
- ▶ Aqueous hydrogen sulfate decomposes to form sulfur trioxide gas and liquid water

Word Problems

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- ▶ Write formulas then balance.
- ▶ $(\text{NH}_4)_2\text{CO}_3 + \text{MgSO}_4 \rightarrow (\text{NH}_4)_2\text{SO}_4 + \text{MgCO}_3$
- ▶ $3\text{Fe} + \text{Pb}_3(\text{PO}_4)_2 \rightarrow \text{Fe}_3(\text{PO}_4)_2 + 3\text{Pb}$
- ▶ $\text{H}_2\text{SO}_4 (aq) \rightarrow \text{SO}_3 (g) + \text{H}_2\text{O} (l)$

Word Problems

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- ▶ Balance the equations. Then write the word equations for the following:
- ▶ $\text{Zn} + \text{Pb}(\text{NO}_3)_2 \rightarrow \text{Zn}(\text{NO}_3)_2 + \text{Pb}$
- ▶ $\text{Ca}(\text{OH})_2 + \text{H}_3\text{PO}_4 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + \text{H}(\text{OH})$
- ▶ $\text{Al} + \text{HCl} \rightarrow \text{AlCl}_3 + \text{H}_2$

- ▶ H_3PO_4 = phosphoric acid; HCl = hydrochloric acid

Word Problems

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- ▶ Balance the equations. Then write the word equations for the following:
- ▶ $\text{Zn} + \text{Pb}(\text{NO}_3)_2 \rightarrow \text{Zn}(\text{NO}_3)_2 + \text{Pb}$
- ▶ $3\text{Ca}(\text{OH})_2 + 2\text{H}_3\text{PO}_4 \rightarrow \text{Ca}_3(\text{PO}_4)_2 + 6\text{H}(\text{OH})$
- ▶ $2\text{Al} + 6\text{HCl} \rightarrow \text{AlCl}_3 + 3\text{H}_2$

- ▶ H_3PO_4 = phosphoric acid; HCl = hydrochloric acid

Word Problems

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- ▶ Balance the equations. Then write the word equations for the following:
- ▶ Zinc and lead (II) nitrate react to produce zinc nitrate and lead
- ▶ Calcium hydroxide and phosphoric acid react to form calcium phosphate and water
- ▶ Aluminum and hydrochloric acid produce aluminum chloride and hydrogen
