

CHEMICAL REACTIONS REVIEW

WORKSHEET ANSWERS



Part I: Balance the following equations

- 2, 1 \rightarrow 2
- 1, 12 \rightarrow 8
- 2 \rightarrow 2, 1
- 1, 2 \rightarrow 1, 1
- 2, 2 \rightarrow 2, 1
- 1, 8 \rightarrow 10, 16
- 4, 11 \rightarrow 8, 6
- 4, 3 \rightarrow 2
- 2, 15 \rightarrow 14, 6
10. 1, 3 \rightarrow 2
11. 2, 1 \rightarrow 2
12. 6, 6 \rightarrow 1, 6
13. 1, 4 \rightarrow 1, 4
14. 2 \rightarrow 1, 1
15. 1, 2 \rightarrow 1, 1
16. 2, 3 \rightarrow 1, 6
17. 1, 6 \rightarrow 3, 2
18. 1, 8 \rightarrow 1, 4, 4

Part II: Write balanced equations for the following word equations

- potassium chloride + silver nitrate \rightarrow potassium nitrate + silver chloride
 $\text{KCl} + \text{AgNO}_3 \rightarrow \text{KNO}_3 + \text{AgCl}$
- aluminum hydroxide + sodium nitrate \rightarrow aluminum nitrate + sodium hydroxide
 $\text{Al}(\text{OH})_3 + 3 \text{NaNO}_3 \rightarrow \text{Al}(\text{NO}_3)_3 + 3 \text{NaOH}$
- iron metal + copper(II) sulfate \rightarrow iron(II) sulfate + copper metal
 $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$
- aluminum metal + copper(II) chloride \rightarrow aluminum chloride + copper metal
 $2 \text{Al} + 3 \text{CuCl}_2 \rightarrow 2 \text{AlCl}_3 + 3 \text{Cu}$

Part III: identify the type of reaction and balance

- $2\text{H}_2\text{O}(\text{l}) \rightarrow 2\text{H}_2(\text{g}) + \text{O}_2(\text{g})$; decomposition
- $2\text{NaCl}(\text{aq}) + \text{H}_2(\text{g}) \rightarrow 2\text{HCl}(\text{aq}) + 2\text{Na}(\text{s})$ single replacement
- $\text{C}_2\text{H}_4 + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 2\text{H}_2\text{O}$ combustion
- $2\text{Mg}(\text{s}) + \text{O}_2(\text{g}) \rightarrow 2\text{MgO}(\text{s})$ synthesis
- $\text{Ca}(\text{OH})_2(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{H}_2\text{O}(\text{g})$ decomposition/ gas formation
- $2\text{NaCl} + \text{H}_2\text{SO}_4 \rightarrow \text{Na}_2\text{SO}_4 + 2\text{HCl}$ double replacement
- $\text{HCl} + \text{NaOH} \rightarrow \text{H}_2\text{O} + \text{NaCl}$ acid base/ double replacement
- $\text{HBr} + \text{NaOH} \rightarrow \text{NaBr} + \text{H}_2\text{O}$ acid base double replacement
- $\text{Ba}(\text{NO}_3)_2(\text{aq}) + \text{CuSO}_4(\text{aq}) \rightarrow \text{BaSO}_4(\text{s}) + \text{Cu}(\text{NO}_3)_2(\text{aq})$ precipitation/ double replacement

Part IV: Write a complete, balanced equation for the following and identify the type of reaction

- zinc and copper II sulfate yield zinc sulfate and copper metal
 $\text{Zn} + \text{CuSO}_4 \rightarrow \text{ZnSO}_4 + \text{Cu}$ SINGLE REPLACEMENT
- Chlorine gas and sodium bromide yield sodium chloride and bromine
 $\text{Cl}_2 + 2 \text{NaBr} \rightarrow 2 \text{NaCl} + \text{Br}_2$ SINGLE REPLACEMENT
- aluminum hydroxide and sulfuric acid neutralize to make water and aluminum sulfate.
 $2 \text{Al}(\text{OH})_3 + 3 \text{H}_2\text{SO}_4 \rightarrow 6 \text{H}_2\text{O} + \text{Al}_2(\text{SO}_4)_3$ DOUBLE REPLACEMENT OR ACID-BASE NEUTRALIZATION

Part V: Knowing the type of reactions; identify the products of the reaction and balance the reaction

- Synthesis; $4\text{Al} + 3\text{O}_2 \rightarrow 2\text{Al}_2\text{O}_3$
- Decomposition $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$
- Single Replacement $2\text{NaBr} + \text{Cl}_2 \rightarrow 2\text{NaCl} + \text{Br}_2$
- Double replacement $2\text{KCl} + \text{H}_2\text{SO}_4 \rightarrow \text{K}_2\text{SO}_4 + 2\text{HCl}$
- Combustion $\text{C}_2\text{H}_4 + 3\text{O}_2 \rightarrow 2\text{CO}_2 + 2\text{H}_2\text{O}$

Part VI: Predict the product:

- Aluminum Hydroxide + acetic acid =
 $\text{Al}(\text{OH})_3 + 3\text{HC}_2\text{H}_3\text{O}_2 \rightarrow 3\text{H}_2\text{O} + \text{Al}(\text{C}_2\text{H}_3\text{O}_2)_3$