

CHEMICAL REACTIONS REVIEW WORKSHEET ANSWERS



Part I: Balance the following equations

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|------------------|--------------------|
| 1. 2, 1 → 2 | 10. 1, 3 → 2 |
| 2. 1, 12 → 8 | 11. 2, 1 → 2 |
| 3. 2 → 2, 1 | 12. 6, 6 → 1, 6 |
| 4. 1, 2 → 1, 1 | 13. 1, 4 → 1, 4 |
| 5. 2, 2 → 2, 1 | 14. 2 → 1, 1 |
| 6. 1, 8 → 10, 16 | 15. 1, 2 → 1, 1 |
| 7. 4, 11 → 8, 6 | 16. 2, 3 → 1, 6 |
| 8. 4, 3 → 2 | 17. 1, 6 → 3, 2 |
| 9. 2, 15 → 14, 6 | 18. 1, 8 → 1, 4, 4 |

Part II: Write balanced equations for the following word equations

- potassium chloride + silver nitrate → potassium nitrate + silver chloride
 $\text{KCl} + \text{AgNO}_3 \rightarrow \text{KNO}_3 + \text{AgCl}$
- aluminum hydroxide + sodium nitrate → 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 → iron(II) sulfate + copper metal
 $\text{Fe} + \text{CuSO}_4 \rightarrow \text{FeSO}_4 + \text{Cu}$
- aluminum metal + copper(II) chloride → 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 =
 $\text{Al}(\text{OH})_3 + 3\text{HC}_2\text{H}_3\text{O}_2 \rightarrow 3\text{H}_2\text{O} + \text{Al}(\text{C}_2\text{H}_3\text{O}_2)_3$