

## REACTION TYPES WORKSHEET

### SYNTHESIS REACTIONS:

Identify whether or not each of the following chemical equations is a synthesis (S), decomposition (D), single replacement (SR), or double replacement (DR).

- |   |   |
|---|---|
| (A) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$ <b>S</b>                           | (B) $2\text{Al} + \text{CuCl}_2 \rightarrow 2\text{AlCl}_3 + 3\text{Cu}$ <b>SR</b>  |
| (C) $3\text{KClO}_3 \rightarrow 2\text{KCl} + 3\text{O}_2$ <b>D</b>                               | (D) $3\text{Ca}(\text{NO}_3)_2 + 2\text{Na}_3\text{PO}_4 \rightarrow 6\text{NaNO}_3 + \text{Ca}_3(\text{PO}_4)_2$ <b>DR</b> |
| (E) $\text{CO}_2 \rightarrow \text{C} + \text{O}_2$ <b>D</b>                                      | (F) $2\text{AgCl} + \text{Cu} \rightarrow \text{CuCl}_2 + 2\text{Ag}$ <b>SR</b>   |
| (G) $2\text{Cr} + 3\text{F}_2 \rightarrow 2\text{CrF}_3$ <b>S</b>                                 | (H) $2\text{NaClO}_3 \rightarrow 2\text{NaCl} + 3\text{O}_2$ <b>D</b>   |
| (I) $2\text{N}_2\text{O} \rightarrow 2\text{N}_2 + \text{O}_2$ <b>D</b>                           | (J) $\text{Au}(\text{NO}_3)_3 + 3\text{Ag} \rightarrow \text{Au} + 3\text{AgNO}_3$ <b>SR</b>                                |
| (K) $\text{CH}_4 \rightarrow \text{C} + 2\text{H}_2$ <b>D</b>                                     | (L) $2\text{NH}_4\text{Br} + \text{Cl}_2 \rightarrow 2\text{NH}_4\text{Cl} + \text{Br}_2$ <b>SR</b>                         |
| (M) $2\text{FeBr}_3 + 3\text{Zn} \rightarrow 3\text{ZnBr}_2 + 2\text{Fe}$ <b>SR</b>               | (N) $\text{FeBr}_2 + \text{ZnSO}_4 \rightarrow \text{ZnBr}_2 + \text{FeSO}_4$ <b>DR</b>                                     |
| (O) $2\text{Al} + \text{Fe}_2\text{O}_3 \rightarrow 2\text{Fe} + \text{Al}_2\text{O}_3$ <b>SR</b> | (P) $2\text{Fe} + \text{O}_2 \rightarrow 2\text{FeO}$ <b>S</b>  |

### **BONUS CHALLENGE!!**

Can you identify the product of these **SYNTHESIS** reactions?

- |  |   |
|--|---|
| (A) $2\text{Al} + 3\text{F}_2 \rightarrow \underline{2\text{AlF}_3}$ | (B) $4\text{K} + \text{O}_2 \rightarrow \underline{2\text{K}_2\text{O}}$    |
| (C) $\text{Cd} + \text{I}_2 \rightarrow \underline{\text{CdI}_2}$    | (D) $12\text{Cs} + \text{P}_4 \rightarrow \underline{4\text{Cs}_3\text{P}}$ |

Can you identify the product of these **DECOMPOSITION** reactions?

- |   |   |
|---|---|
| (A) $2\text{K}_2\text{O} \rightarrow \underline{4\text{K} + \text{O}_2}$    | (B) $\text{MgF}_2 \rightarrow \underline{\text{Mg} + \text{F}_2}$ |
| (C) $\text{Ca}_3\text{N}_2 \rightarrow \underline{3\text{Ca} + \text{N}_2}$ | (D) $2\text{CsI} \rightarrow \underline{2\text{Cs} + \text{I}_2}$ |

Can you identify the product of these **SINGLE REPLACEMENT** reactions?

- |   |   |
|---|---|
| (A) $2\text{Na} + \text{Cu}_2\text{O} \rightarrow \underline{2\text{Cu} + \text{Na}_2\text{O}}$ | (B) $\text{CuF}_2 + \text{Mg} \rightarrow \underline{\text{Cu} + \text{MgF}_2}$                         |
| (C) $\text{K}_2 + 2\text{CsBr} \rightarrow \underline{2\text{Cs} + 2\text{KBr}}$                | (D) $\text{Be} + \text{Fe}(\text{NO}_3)_2 \rightarrow \underline{\text{Fe} + \text{Be}(\text{NO}_3)_2}$ |

Can you identify the product of these **DOUBLE REPLACEMENT** reactions?

- |  |   |
|--|---|
| (A) $2\text{K}_3\text{PO}_4 + 3\text{MgI}_2 \rightarrow \underline{6\text{KI} + \text{Mg}_3(\text{PO}_4)_2}$ | (B) $\text{SrCl}_2 + \text{Pb}(\text{NO}_3)_2 \rightarrow \underline{\text{Sr}(\text{NO}_3)_2 + \text{PbCl}_2}$ |
| (C) $\text{AlCl}_3 + 3\text{CuNO}_3 \rightarrow \underline{\text{Al}(\text{NO}_3)_3 + 3\text{CuCl}}$         | (D) $2\text{AgNO}_3 + \text{Na}_2\text{CrO}_4 \rightarrow \underline{\text{Ag}_2\text{CrO}_4 + 2\text{NaNO}_3}$ |