Chemical Reactions Worksheet

**5 types of Chemical Reactions**

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| --- | --- | --- | --- | --- |
| **Type of Reaction** | **Symbolic** | **Descriptive** | **GIVE AWAY** | **Examples** |
| *Synthesis* | A + B → AB | element + element → compound | **Only 1 product!** | Na + Cl2 → NaCl  H2O + SO3 → H2SO4 |
| *Decomposition* | AB → A + B | compound → element + element | **Only 1 reactant!** | H2O → H2 + O2  H2CO3 → H2O + CO2 |
| *Single Displacement* | A + BC → B + AC  A & B switch places OR  A & C switch places | element + compound →  new element + new compound | **element + compound**  **(and a switch)** | Mg + HCl → H2 + MgCl2  Fe + Cu(NO3)2 → Cu + Fe(NO3)2 |
| *Double Displacement* | AB + CD → CB + AD  A and C switch places | compound + compound →  new compound + new compound | **compound + compound**  **(and a switch)** | 2KI + Pb(NO3)2 → PbI2 + KNO3  HCl + NaOH → NaCl + HOH |
| *Combustion*  *of metals and*  *non-metals* | M + O2  N + O2 | metal + oxygen gas → metal oxide  non-metal + oxygen gas → non-metal oxide | **oxygen gas (O2) is a reactant** | Mg + O2 → MgO  C + O2 → CO2 |
| *Combustion of Hydrocarbons* | hydrocarbon + O2 →  CO2 + H2O | hydrocarbon + oxygen gas → carbon + water | CH4 + 2O2 → CO2 + 2H2O  2C2H5OH + 3O2 → 2CO2 + 3H2O |

***Chemical Reactions***

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| ***Reaction*** | ***Signs of a***  ***Chemical Reaction*** | ***Reactants*** | ***Products*** | ***Chemical Equation***  ***(using chemical formulas)*** | ***Type of Reaction*** |
| 1 |  | sodium (Na)  chlorine gas (Cl2) |  |  |  |
| 2 |  | sodium (Na)  water (H2O) |  |  |  |
| 3 |  | sodium hydroxide (NaOH)  cobalt (II) chloride (CoCl2) |  |  |  |
| 4 |  | iron (III) oxide (Fe2O3)  aluminum (Al) |  |  |  |
| 5 |  | magnesium (Mg)  carbon dioxide (CO2) |  |  |  |
| 6 |  | Ammonium Thiocyanate  (NH4SCN)  Barium Hydroxide Octahydrate (Ba(OH)2∙8H2O) |  |  |  |
| 7 |  | Nitrogen Triiodide (NI3) |  |  |  |
| 8 |  | Sodium Iodide (NaI)  Mercury (II) Chloride (HgCl2) |  |  |  |
| 9 |  | Acetylene (Ethyne) (C2H2)  Oxygen (O2) |  |  |  |