Ch. 11 Study Guide

Know these things:

* Know and be able to recognize the 5 types of chemical reactions
* How to read chemical equations including the different symbols
* How to balance chemical equations using coefficients
* How to count the number of atoms in a compound
* The difference between reactants and products
* Understand, recognize, and be able to write word equations, skeleton equations, and balanced equations
* What a catalyst is and does, and how to represent it in an equation
* What the activity series is and how to use it
* The difference between coefficients and subscripts
* What elements exists as diatomic when found by themselves

Here are some practice problems:

*Balance the reactions* ***1 to 6*** *and indicate which type of chemical reaction (synthesis, decomposition, single-displacement, double-displacement or combustion) is being represented:*

1. \_\_\_\_ NaBr + \_\_\_\_ Ca(OH)2 🡪 \_\_\_ CaBr2 + \_\_\_\_ NaOH Reaction Type : \_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. \_\_\_\_ NH3+ \_\_\_\_ H2SO4 🡪 \_\_\_\_ (NH4)2SO4 Reaction Type : \_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. \_\_\_\_ C5H9O + \_\_\_\_ O2 🡪 \_\_\_\_ CO2 + \_\_\_\_ H2O Reaction Type : \_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. \_\_\_\_ Pb + \_\_\_\_ H3PO4 🡪 \_\_\_\_ H2 + \_\_\_\_ Pb3(PO4)2 Reaction Type : \_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. \_\_\_\_ Li3N + \_\_\_\_ NH4NO3 🡪 \_\_\_ LiNO3 + \_\_\_ (NH4)3N Reaction Type : \_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. \_\_\_\_ HBr + \_\_\_ Al(OH)3 🡪 \_\_\_ H­2O + \_\_\_ AlBr3 Reaction Type : \_\_\_\_\_\_\_\_\_\_\_\_\_\_

*Indicate which type of chemical reaction (synthesis, decomposition, single-displacement, double-displacement or combustion) is being represented in 7 to 15.*

1. Na3PO4 + 3 KOH 🡪 3 NaOH + K3PO4 Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. MgCl2 + Li2CO3 🡪 MgCO3 + 2 LiCl Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. C6H12 + 9 O2 🡪 6 CO2 + 6 H2O Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Pb + FeSO4 🡪 PbSO4 + Fe Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. CaCO3 🡪 CaO + CO2 Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. P4 + 3 O2 🡪 2 P2O3 Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
7. 2 RbNO3 + BeF2 🡪 Be(NO3)2 + 2 RbF Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
8. 2 AgNO3 + Cu 🡪 Cu(NO3)2 + 2 Ag Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. C3H6O + 4 O2 🡪 3 CO2 + 3 H2O Reaction Type \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Answer the following with either a symbol or a meaning:

(aq) 🡪

Heat is added to the reaction 🡪

Solid, liquid, gas 🡪

+ 🡪

🡨🡪 🡪

Catalyst is used 🡪

Yield, produces, etc 🡪

On the next page, determine how many atoms are in the compounds:

Directions for each problem

1) write down the different elements in each compound.

2) write down how many of that particular atom there are

3) how many atoms are there total in the compound.

|  |  |  |
| --- | --- | --- |
| **Activity Series of Metals** | | |
|  | **Name** | **Symbol** |
| Lithium | Li |
| Calcium | Ca |
| Sodium | Na |
| Magnesium | Mg |
| Aluminum | Al |
| Zinc | Zn |
| Iron | Fe |
| Lead | Pb |
| Copper | Cu |
| Mercury | Hg |
| Silver | Ag |

1) 4 HNO3 2) 4 Mg(OH)2 3) 5 ZnSO4

4) 2 Sr3(PO4)2 5) 4 Al(OH)3

6) Ca (C2H3O2)2 7) 4 Al2(SO3)3

8) 2 (NH4)3PO4 9) 4 Mg(OH)2

Complete the following word equations by performing a single-replacement reaction and writing the skeleton equation. Some may have no reaction at all, in which you should indicate that as well – use the activity series. Then, write the final, balanced equation for each.

1. Copper (II) sulfide + Magnesium 🡪

Skeleton equation:

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Balanced equation:

1. Mercury + Silver (I) chloride 🡪

Skeleton equation:

-------------------------------------------------------------------------

Balanced equation:

1. Bromine + Cesium chloride🡪

Skeleton equation:

-------------------------------------------------------------------------

Balanced equation:

1. Sodium bromide + Fluorine 🡪

Skeleton equation:

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Balanced equation: