**Chemistry Unit 5 Reactions Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Balancing Reactions Worksheet**

 Atoms are not \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_ during a chemical reaction. There must be the \_\_\_\_\_\_\_\_\_\_\_ number of atoms on each \_\_\_\_\_\_\_\_\_\_\_ of the \_\_\_\_\_\_\_\_\_\_\_\_. To balance the chemical equation, you must add \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ in front of the chemical formulas in the equation. You cannot \_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_ subscripts!

**Balance each equation. Be sure to show your lists! Remember you cannot add subscripts or place coefficients in the middle of a chemical formula.**

1. Na + MgF2 🡪 NaF + Mg

1. Mg + HCl 🡪 MgCl2 + H2

1. Cl2 + KI 🡪 KCl + I2

1. NaCl 🡪 Na + Cl2

1. Na + O2 🡪 Na2O

1. Na + HCl 🡪 H2 + NaCl

1. K + Cl2 🡪 KCl

**Balance each of the following placing a coefficient in each blank in front of a chemical formula. When done balancing, place a “1” in any blank remaining. (Not required, but indicates you are done.)In the space to the left of each number, identify the type of reaction using S for synthesis, D for decomposition, SR for single replacement, DR for double replacement and C for combustion.**

\_\_\_\_\_1. \_\_\_\_\_H2 + \_\_\_\_\_O2 🡪 \_\_\_\_\_H2O

\_\_\_\_\_2. \_\_\_\_\_S8 + \_\_\_\_\_O2 🡪\_\_\_\_\_SO3

\_\_\_\_\_3. \_\_\_\_\_HgO 🡪 \_\_\_\_\_Hg + \_\_\_\_\_O2

\_\_\_\_\_4. \_\_\_\_\_Zn + \_\_\_\_\_HCl 🡪 \_\_\_\_\_ZnCl2 + \_\_\_\_\_H2

\_\_\_\_\_5. \_\_\_\_\_Na + \_\_\_\_\_H2O 🡪 \_\_\_\_\_NaOH + \_\_\_\_\_H2

\_\_\_\_\_6. \_\_\_\_\_C10H16 + \_\_\_\_\_Cl2 🡪 \_\_\_\_\_C + \_\_\_\_\_HCl

\_\_\_\_\_7. \_\_\_\_\_Si2H3 + \_\_\_\_\_O2 🡪 \_\_\_\_\_SiO2 + \_\_\_\_\_H2O

\_\_\_\_\_8. \_\_\_\_\_Fe + \_\_\_\_\_O2 🡪 \_\_\_\_\_Fe2O3

\_\_\_\_\_9. \_\_\_\_\_C7H6O2 + \_\_\_\_\_O2 🡪 \_\_\_\_\_CO2 + \_\_\_\_\_H2O

\_\_\_\_\_10. \_\_\_\_\_FeS2 + \_\_\_\_\_O2 🡪 \_\_\_\_\_Fe2O3 + \_\_\_\_\_SO2

\_\_\_\_\_11. \_\_\_\_\_Fe2O3 + \_\_\_\_\_H2 🡪 \_\_\_\_\_Fe + \_\_\_\_\_H2O

\_\_\_\_\_12. \_\_\_\_\_K + \_\_\_\_\_Br2 🡪 \_\_\_\_\_KBr

\_\_\_\_\_13. \_\_\_\_\_C2H2 + \_\_\_\_\_O2 🡪 \_\_\_\_\_CO2 + \_\_\_\_\_H2O

\_\_\_\_\_14. \_\_\_\_\_H2O2  🡪 \_\_\_\_\_H2O + \_\_\_\_\_O2

\_\_\_\_\_15. \_\_\_\_\_C7H16 + \_\_\_\_\_O2 🡪 \_\_\_\_\_CO2 + \_\_\_\_\_H2O

\_\_\_\_\_16. \_\_\_\_\_SiO2 + \_\_\_\_\_HF 🡪 \_\_\_\_\_SiF4 + \_\_\_\_\_H2O

\_\_\_\_\_17. \_\_\_\_\_KClO3 🡪 \_\_\_\_\_KCl + \_\_\_\_\_O2

\_\_\_\_\_18. \_\_\_\_\_KClO3 🡪 \_\_\_\_\_KClO4 + \_\_\_\_\_KCl

\_\_\_\_\_19. \_\_\_\_\_P4O10 + \_\_\_\_\_H2O 🡪 \_\_\_\_\_H3PO4

\_\_\_\_\_20. \_\_\_\_\_Sb + \_\_\_\_\_O2 🡪\_\_\_\_\_Sb4O6

**Write the complete balanced equation for each chemical reaction described in words. Include a state descriptor for each reactant and product.**

1. Aluminum metal reacts with iron (II) oxide powder to produce aluminum oxide solid and iron metal.

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1. Aluminum sulphate solution and calcium hydroxide solution produce a precipitate of aluminum hydroxide and solid calcium sulphate.

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1. Ammonia gas (NH3) plus oxygen gas yields nitrogen monoxide gas plus water vapour.

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1. Calcium hydroxide solution and carbon dioxide gas yields solid calcium carbonate and liquid water.

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1. Aqueous iron (III) chloride and sodium carbonate solution yields aqueous sodium chloride and a precipitate of iron (III) carbonate.

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1. Solid iron (III) oxide and carbon monoxide gas yields iron metal and carbon dioxide gas.

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1. Magnesium carbonate solution plus aqueous hydrochloric acid yields magnesium chloride solution plus liquid water and carbon dioxide gas.

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1. Silicon dioxide solid plus aqueous hydrofluoric acid yields solid silicon tetrafluoride plus liquid water.

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1. Aqueous sodium hydroxide and carbon dioxide gas yields sodium carbonate solution and liquid water.

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