Name _____
Teacher _____
Class _____ Block ___
Date _____

Balancing Types of Reactions

Balance the following equations using **atom inventory** and **coefficients**. If it is balanced, write "balanced."

1. Decomposition Reaction of hydrogen peroxide.
   ____ H_2O_2 → ____ H_2O + ____ O_2

2. Decomposition Reaction of copper (II) carbonate.
   ____ $CuCO_3$ → ____ CuO + ____ CO_2

3. Synthesis of magnesium oxide.
   ____ Mg + ____ O_2 → ____ MgO

4. Synthesis of copper (II) oxide.
   ____ Cu + ____ O_2 → ____ CuO

5. Double Replacement between lead (II) nitrate and sodium carbonate.
   ____ $Pb(NO_3)_2$ + ____ Na_2CO_3 → ____ $PbCO_3$ + ____ $NaNO_3$

6. Double Replacement between lead (II) nitrate and potassium iodide.
   ____ $Pb(NO_3)_2$ + ____ KI → ____ PbI_2 + ____ KNO_3

7. Single Replacement between copper (II) sulfate and zinc.
   ____ $CuSO_4$ + ____ Zn → ____ Cu + ____ $ZnSO_4$

8. Single Replacement between zinc and hydrochloric acid.
   ____ Zn + ____ HCl → ____ $ZnCl_2$ + ____ H_2

9. Synthesis of water vapor.
   ____ H_2 + ____ O_2 → ____ H_2O

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Types of Reactions WS

1. Complete and balance each of the following reactions identified by the type:

   (a) synthesis: $Li_2O + H_2O \rightarrow LiOH$

   (b) decomposition and redox: $Mg(ClO_3)_2 \rightarrow MgCl_2 + O_2$

   (c) single-replacement and redox: $Na + K_2O \rightarrow$ _____

   (d) double-replacement and acid/base: $HNO_3 + Ca(OH)_2 \rightarrow$ _____

   (e) combustion and redox: $C_5H_{12} + O_2 \rightarrow$ _____

2. Classify each of the following reactions as synthesis (S), decomposition (D), single-replacement (SR), double-replacement (DR), combustion (C), redox (R), precipitation (P), or acid/base (A/B) by circling the correct answer:

   (a) $N_2 + 3H_2 \rightarrow 2NH_3$ S D SR DR C R P A/B

   (b) $2Li + 2H_2O \rightarrow 2LiOH + H_2$ S D SR DR C R P A/B

   (c) $2Na\ NO_3 \rightarrow 2NaNO_2 + O_2$ S D SR DR C R P A/B

   (d) $2C_6H_{14} + 19O_2 \rightarrow 12CO_2 + 14H_2O$ S D SR DR C R P A/B

   (e) $NH_4Cl \rightarrow NH_3 + HCl$ S D SR DR C R P A/B

   (f) $BaO + H_2O \rightarrow Ba(OH)_2$ S D SR DR C R P A/B

   (g) $AgNO_3 + NaCl \rightarrow AgCl + NaNO_3$ S D SR DR C R P A/B

3. Complete and **balance** each of the following equations and identify each type of reaction.

   (a) $Br_2 + KI \rightarrow$ S D SR DR C R P A/B

   (b) $Zn + HCl \rightarrow$ S D SR DR C R P A/B

   (c) $Ca + Cl_2 \rightarrow$ S D SR DR C R P A/B

   (d) $NaClO_3 \rightarrow$ S D SR DR C R P A/B
   (Hint: See number 1b above)

   (e) $C_8H_{18} + O_2 \rightarrow$ S D SR DR C R P A/B

   (f) $CuCl_2 + Na_2S \rightarrow$ S D SR DR C R P A/B