name: _____ date: _____

predicting products of chemical reactions - practice problems

Directions: Predict the products for, and then *balance* each of the following chemical reactions:

1. $SiI_4 + Mg \rightarrow$ (single replacement)

2. $2Al + 3I_2 \rightarrow$ (synthesis)

3. $CuCl_2 + KOH \rightarrow$ (double replacement)

4. $NH_3 \rightarrow$ (decomposition)

5. $Mg + HCl \rightarrow$ (single replacement)

6. $C_4H_{10} + O_2 \rightarrow$ (combustion)

7. $HNO_3 + Ba(OH)_2 \rightarrow$ (double replacement)

8. $KClO_3 \rightarrow$ (decomposition)

9. $Zn + O_2 \rightarrow$ (synthesis)

10. $Fe + CuSO_4 \rightarrow$ (single replacement)

11. $AlBr_3 + Cl_2 \rightarrow$ (single replacement)

12. $C_3H_8 + O_2 \rightarrow$ (combustion)

Directions: Predict the products for, and then *balance* each of the following chemical reactions:

13. Lithium metal reacts with liquid bromine.

14. Potassium metal reacts with silver chloride.

15. Sodium metal reacts with hydrochloric acid, HCl, and produces hydrogen gas as one of the products.

16. Solutions of tin (II) nitrate and potassium hydroxide are combined.

17. Beryllium silicate is heated (decomposition).

18. Octane, C_8H_{18}, is burned in the presence of oxygen gas.

name: **suggested answers** date: _____

predicting products of chemical reactions - practice problems

Directions: Predict the products for, and then *balance* each of the following chemical reactions:

1. $SiI_4 + Mg \rightarrow$ (single replacement) $SiI_4 + 2Mg \rightarrow 2MgI_2 + Si$

2. $2Al + 3I_2 \rightarrow$ (synthesis) $2Al + 3I_2 \rightarrow 2AlI_3$

3. $CuCl_2 + KOH \rightarrow$ (double replacement) $CuCl_2 + 2KOH \rightarrow Cu(OH)_2 + 2KCl$

4. $NH_3 \rightarrow$ (decomposition) $2NH_3 \rightarrow N_2 + 3H_2$

5. $Mg + HCl \rightarrow$ (single replacement) $Mg + 2HCl \rightarrow MgCl_2 + H_2$

6. $C_4H_{10} + O_2 \rightarrow$ (combustion) $2C_4H_{10} + 13O_2 \rightarrow 8CO_2 + 10H_2O$

7. $HNO_3 + Ba(OH)_2 \rightarrow$ (double replacement) $2HNO_3 + Ba(OH)_2 \rightarrow 2HOH + Ba(NO_3)_2$

8. $KClO_3 \rightarrow$ (decomposition) $2KClO_3 \rightarrow 2K + Cl_2 + 3O_2$

9. $Zn + O_2 \rightarrow$ (synthesis) $2Zn + O_2 \rightarrow 2ZnO$

10. $Fe + CuSO_4 \rightarrow$ (single replacement) $Fe + CuSO_4 \rightarrow FeSO_4 + Cu$

11. $AlBr_3 + Cl_2 \rightarrow$ (single replacement) $2AlBr_3 + 3Cl_2 \rightarrow 2AlCl_3 + 3Br_2$

12. $C_3H_8 + O_2 \rightarrow$ (combustion) $C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$

Directions: Predict the products for, and then *balance* each of the following chemical reactions:

13. Lithium metal reacts with liquid bromine.

$2Li + Br_2 \rightarrow 2LiBr$

14. Potassium metal reacts with silver chloride.

$K + AgCl \rightarrow KCl + Ag$

15. Sodium metal reacts with hydrochloric acid, HCl, and produces hydrogen gas as one of the products.

$2Na + 2HCl \rightarrow 2NaCl + H_2$

16. Solutions of tin (II) nitrate and potassium hydroxide are combined.

$Sn(NO_3)_2 + 2KOH \rightarrow Sn(OH)_2 + 2KNO_3$

17. Beryllium silicate is heated (decomposition).

$2BeSiO_3 \rightarrow 2Be + 2Si + 3O_2$

18. Octane, C_8H_{18}, is burned in the presence of oxygen gas.

$2C_8H_{18} + 25O_2 \rightarrow 16CO_2 + 18H_2O$