Name: _____

___ 1) Given the reaction:

$Cu + 4HNO_3 \longrightarrow Cu(NO_3)_2 + 2H_2O + 2NO_2$

What is the total mass of H_2O produced when 32 grams of Cu is completely consumed?

1) 18 g
2) 72 g
3) 9.0 g
4) 36 g

___ 2) Given the reaction:

$2CO + O_2 \longrightarrow 2CO_2$

What is the minimum number of moles of O_2 required to produce one mole of CO_2?

1) 0.50
2) 0.25
3) 2.0
4) 1.0

___ 3) Given the reaction:

$4Al + 3O_2 \longrightarrow 2Al_2O_3$

How many moles of Al_2O_3 will be formed when 27 grams of Al reacts completely with O_2?

1) 1.0
2) 2.0
3) 0.50
4) 4.0

___ 4) Given the reaction:

$3Cu + 8HNO_3 \longrightarrow 3Cu(NO_3)_2 + 2NO + 4H_2O$

The total number of grams of Cu needed to produce 1.0 mole of $Cu(NO_3)_2$ is

1) 192 g
2) 32 g
3) 128 g
4) 64 g

___ 5) In the reaction $Fe_2O_3 + 3CO \longrightarrow 2Fe + 3CO_2$, what is the total number of moles of CO used to produce 112 grams of iron?

1) 1.0
2) 2.0
3) 3.0
4) 4.0

___ 6) When the equation

$\_\_Na(s) + \_\_H_2O(\ell) \longrightarrow \_\_NaOH(aq) + \_\_H_2(g)$

is correctly balanced using *smallest* whole numbers, the coefficient of the water is

1) 1
2) 2
3) 3
4) 4

___ 7) Consider the reaction:

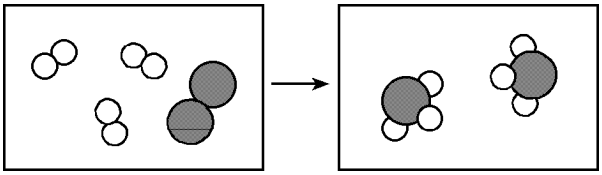
$H_2(g) + \frac{1}{2}O_2(g) \longrightarrow H_2O(\ell) + \text{energy}$

Which of the following phrases *best* describes this reaction?

1) exothermic, absorbing energy
2) endothermic, absorbing energy
3) endothermic, releasing energy
4) exothermic, releasing energy

Questions 8 and 9 refer to the following:

In the particle diagram below, ● represents an atom of element *A* and ○ represents an atom of element *B*.



___ 8) Which equation *best* describes the reaction shown in the diagram?

1) $3A + B \longrightarrow 2AB$
2) $3A_2 + B_2 \longrightarrow 2A_3B$
3) $A_2 + 3B_2 \longrightarrow 2AB_3$
4) $2A + 6B \longrightarrow A_2B_6$

___ 9) What general type of reaction is illustrated in the diagram?

1) synthesis
2) decomposition
3) single replacement
4) double replacement

___ 10) Given the reaction:

$$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$$

What is the ratio of moles of $H_2(g)$ consumed to moles of $NH_3(g)$ produced?

1) 6:6
2) 3:2
3) 2:3
4) 1:2

___ 11) When the equation

$$\_\_C_8H_{16} + \_\_O_2 \longrightarrow \_\_CO_2 + \_\_H_2O$$

is correctly balanced using the *smallest* whole number coefficients, the coefficient of O_2 is

1) 8
2) 12
3) 1
4) 16

___ 12) Given the reaction:

$$2CO + O_2 \longrightarrow 2CO_2$$

What is the minimum number of grams of CO required to produce 88 grams of CO_2?

1) 28 g
2) 56 g
3) 64 g
4) 88 g

___ 13) When the equation

$$\_\_Al_2(SO_4)_3 + \_\_ZnCl_2 \longrightarrow \_\_AlCl_3 + \_\_ZnSO_4$$

is correctly balanced using the *smallest* whole number coefficients, the sum of the coefficients is

1) 5
2) 8
3) 9
4) 4

___ 14) Given the reaction:

$$2NaOH + H_2SO_4 \longrightarrow Na_2SO_4 + 2H_2O$$

What is the total number of moles of NaOH needed to react completely with 2 moles of H_2SO_4?

1) 1
2) 2
3) 0.5
4) 4

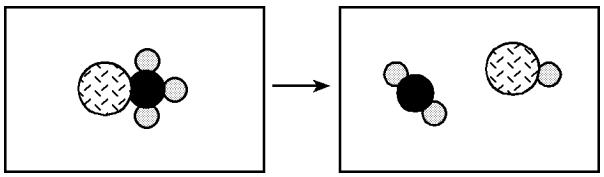
___ 15) Given the unbalanced equation:

$$Li + N_2 \longrightarrow Li_3N$$

When the equation is correctly balanced using *smallest* whole numbers, the coefficient of the lithium is

1) 1
2) 2
3) 3
4) 6

___ 16) What general type of chemical reaction is illustrated in the particle diagram below?



1) synthesis
2) double replacement
3) decomposition
4) single replacement