Limiting Reactant Practice Problems

Name: _____   **Date:** _____

1. Which represents the greatest mass of chlorine?

   A. 1 mole of chlorine

   B. 1 atom of chlorine

   C. 1 gram of chlorine

   D. 1 molecule of chlorine

2. What is the total mass in grams of 0.75 mole of SO_2?

   A. 16 g   B. 24 g   C. 32 g   D. 48 g

3. What is the mass of 4.76 moles of Na_3PO_4 (gram-formula mass = 164 grams/mole)?

4. Given the balanced equation representing the reaction between propane and oxygen:

   $$C_3H_8 + 5O_2 \rightarrow 3CO_2 + 4H_2O$$

   According to this equation, which ratio of oxygen to propane is correct?

   A. $\dfrac{5 \text{ grams } O_2}{1 \text{ gram } C_3H_8}$ B. $\dfrac{5 \text{ moles } O_2}{1 \text{ mole } C_3H_8}$

   C. $\dfrac{10 \text{ grams } O_2}{11 \text{ grams } C_3H_8}$ D. $\dfrac{10 \text{ moles } O_2}{11 \text{ moles } C_3H_8}$

5. The molar mass of $Ba(OH)_2$ is

   A. 154.3 g   B. 155.3 g

   C. 171.3 g   D. 308.6 g

6. The sum of the atomic masses of the atoms in one molecule of $C_3H_6Br_2$ is called the

   A. formula mass

   B. isotopic mass

   C. percent abundance

   D. percent composition

7. Given the reaction:

   $$Ca + 2H_2O \rightarrow Ca(OH)_2 + H_2 \,.$$

   How many moles of H_2O are needed to exactly react with 2.0 moles of Ca?

   A. 1.0   B. 2.0   C. 0.50   D. 4.0

8. In the reaction $N_2 + 3H_2 \rightarrow 2NH_3$, how many grams of H_2 are needed to produce exactly 1 mole of ammonia?

   A. 1 g   B. 2 g   C. 3 g   D. 4 g

9. Given the reaction:

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

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

   A. 1   B. 2   C. 0.5   D. 4

10. Given the equation:

    $$Zn + 2HCl \rightarrow ZnCl_2 + H_2$$

    How many moles of HCl would be required to produce a total of 2 moles of H_2?

    A. 0.5   B. 2   C. 3   D. 4

11. In the reaction $Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$, what is the total number of moles of CO used to produce 112 grams of iron?

    A. 1.0   B. 2.0   C. 3.0   D. 4.0

12. Given the reaction:

$$Mg + 2HCl \rightarrow MgCl_2 + H_2$$
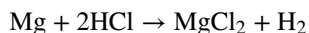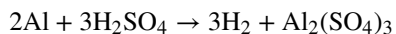
What is the total number of grams of Mg consumed when 0.50 mole of H_2 is produced?

A. 6.0 g B. 12 g C. 3.0 g D. 24 g

13. Given the reaction:

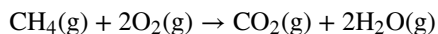$$2Al + 3H_2SO_4 \rightarrow 3H_2 + Al_2(SO_4)_3$$

The total number of moles of H_2SO_4 needed to react completely with 5.0 moles of Al is

A. 2.5 moles   B. 5.0 moles

C. 7.5 moles   D. 9.0 moles

14. Given the reaction: $Ca + 2H_2O \rightarrow Ca(OH)_2 + H_2$. How many moles of H_2O are needed to react completely with 2.0 moles of Ca?

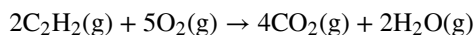A. 1.0 mole   B. 2.0 moles

C. 0.50 mole   D. 4.0 moles

15. Given the reaction:

$$CH_4(g) + 2O_2(g) \rightarrow CO_2(g) + 2H_2O(g)$$

How many moles of oxygen are needed for the complete combustion of 3.0 moles of $CH_4(g)$?

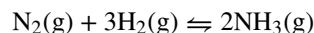A. 6.0 moles   B. 2.0 moles

C. 3.0 moles   D. 4.0 moles

16. Given the reaction:

$$2C_2H_2(g) + 5O_2(g) \rightarrow 4CO_2(g) + 2H_2O(g)$$

What is the total number of grams of $O_2(g)$ needed to react completely with 0.50 mole of $C_2H_2(g)$?

A. 10 g B. 40 g C. 80 g D. 160 g

17. Given the reaction:

$$N_2(g) + 3H_2(g) \rightleftharpoons 2NH_3(g)$$
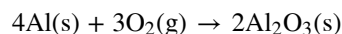
What is the mole-to-mole ratio between nitrogen gas and hydrogen gas?

A. 1:2   B. 1:3   C. 2:2   D. 2:3

18. Given the balanced equation:

$$4Al(s) + 3O_2(g) \rightarrow 2Al_2O_3(s)$$

What is the total number of moles of $O_2(g)$ that must react completely with 8.0 moles of Al(s) in order to form $Al_2O_3(s)$?

19. Given the balanced equation representing a reaction:
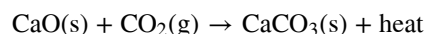
$$2H_2 + O_2 \rightarrow 2H_2O$$
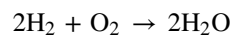
What is the total mass of water formed when 8 grams of hydrogen reacts completely with 64 grams of oxygen?

A. 18 g   B. 36 g   C. 56 g   D. 72 g

20. Given the balanced equation representing a reaction:

$$CaO(s) + CO_2(g) \rightarrow CaCO_3(s) + heat$$

What is the total mass of CaO(s) that reacts completely with 88 grams of $CO_2(g)$ to produce 200. grams of $CaCO_3(s)$?

A. 56 g   B. 88 g   C. 112 g   D. 288 g

Limiting Reactant Practice Problems   01/22/2016

1.
Answer: A

2.
Answer: D

3.
Answer: 781 g

4.
Answer: B

5.
Answer: C

6.
Answer: A

7.
Answer: D

8.
Answer: C

9.
Answer: D

10.
Answer: D

11.
Answer: C

12.
Answer: B

13.
Answer: C

14.
Answer: D

15.
Answer: A

16.
Answer: B

17.
Answer: B

18.
Answer: 6.0

19.
Answer: D

20.
Answer: C