

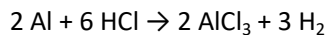
## Stoichiometry Multiple Choice NO Calculator Practice

**Directions:** Try these questions *WITHOUT* using any notes to see what you truly know and *DO NOT* use a calculator to get used to the requirements of the AP Exam... only a Periodic Table should be needed! Look for "easy math" including common factors and rough estimation! Be sure to use the answers that are given to help guide your work and eliminate choices as you go!! The ANSWER KEY is provided at the end for you to check your work!

- 1) What is the total mass of products formed when 16 grams of  $\text{CH}_4$  is burned with excess oxygen?

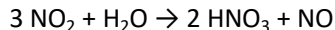
a) 32 g  
b) 36 g  
c) 44 g  
d) 62 g  
e) 80. g

- 2) Calculate the mass of hydrogen formed when 27 g of aluminum reacts with excess hydrochloric acid according to the balanced equation below.



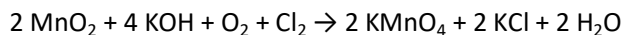
a) 1.5 g  
b) 2.0 g  
c) 3.0 g  
d) 6.0 g  
e) 12 g

- 3) How many grams of nitric acid,  $\text{HNO}_3$ , can be prepared from the reaction of 138 g of  $\text{NO}_2$  with 54.0 g  $\text{H}_2\text{O}$  according to the equation below?



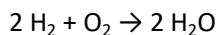
a) 92.0 g  
b) 108 g  
c) 126 g  
d) 189 g  
e) 279 g

- 4) For the reaction below, there is 100. g of each reactant available. Which reagent is the limiting reagent? [Molar Masses:  $\text{MnO}_2 = 86.9 \text{ g/mol}$ ;  $\text{KOH} = 56.1 \text{ g/mol}$ ;  $\text{O}_2 = 32.0 \text{ g/mol}$ ;  $\text{Cl}_2 = 70.9 \text{ g/mol}$ ]



a)  $\text{MnO}_2$   
b)  $\text{O}_2$   
c)  $\text{KOH}$   
d)  $\text{Cl}_2$   
e) They all run out at the same time.

- 5) How many grams of  $\text{H}_2\text{O}$  will be formed when 32.0 g  $\text{H}_2$  is allowed to react with 16.0 g  $\text{O}_2$  according to the reaction below?



a) 9.00 g  
b) 16.0 g  
c) 18.0 g  
d) 32.0 g  
e) 36.0 g

- 6) When 2.00 g of  $\text{H}_2$  reacts with 32.0 g of  $\text{O}_2$  in an explosion, which substance(s) will be present in the final gas mixture?
- $\text{H}_2$ ,  $\text{H}_2\text{O}$ , and  $\text{O}_2$
  - $\text{H}_2$  and  $\text{H}_2\text{O}$  only
  - $\text{O}_2$  and  $\text{H}_2\text{O}$  only
  - $\text{H}_2$  and  $\text{O}_2$  only
  - $\text{H}_2\text{O}$  only
- 7) Which of the following is the simplest formula for a hydrocarbon that is 20.0 percent hydrogen by mass?
- CH
  - $\text{CH}_2$
  - $\text{CH}_3$
  - $\text{C}_2\text{H}_2$
  - $\text{C}_2\text{H}_3$
- 8) In which of the following compounds is the mass ratio of element X to oxygen closest to 2.5 to 1? (The molar mass of X is 40.0 g/mol.)
- $\text{X}_5\text{O}_2$
  - $\text{X}_3\text{O}_2$
  - $\text{X}_2\text{O}$
  - $\text{XO}_2$
  - XO
- 9) According to the balanced equation below, how many moles of the permanganate ion are required to react completely with 25.0 ml of 0.100 M hydrogen peroxide?
- $$6 \text{H}^+ + 5 \text{H}_2\text{O}_2 + 2 \text{MnO}_4^- \rightarrow 5 \text{O}_2 + 2 \text{Mn}^{2+} + 8 \text{H}_2\text{O}$$
- 0.000500 mol
  - 0.00100 mol
  - 0.00500 mol
  - 0.00625 mol
  - 0.0100 mol
- 10) Which of the following statements is true?
- The molar mass of  $\text{CaCO}_3$  is  $100.1 \text{ g mol}^{-1}$ .
  - 50 g of  $\text{CaCO}_3$  contains  $9 \times 10^{23}$  oxygen atoms.
  - A 200 g sample of  $\text{CaCO}_3$  contains 2 moles of  $\text{CaCO}_3$ .
- I only
  - II only
  - III only
  - I and III only
  - I, II, and III

**Answer Key:**

1) E 2) C 3) C 4) C 5) C 6) C 7) C 8) E 9) B 10) E