

1. A compound has the empirical formula CH_2O and a gram-formula mass of 60. grams per mole. What is the molecular formula of this compound?

- A) CH_2O B) $\text{C}_4\text{H}_8\text{O}_4$
C) $\text{C}_3\text{H}_8\text{O}$ D) $\text{C}_2\text{H}_4\text{O}_2$

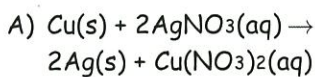
→ show your work

2. What is the empirical formula of a compound that contains 30.4% nitrogen and 69.6% oxygen by mass?

- A) N_2O_5 B) NO_2 C) NO D) N_2O_3

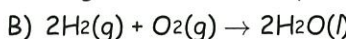
→ work

3. Label each reaction with it's type (EX: synthesis, decomposition, single replacement, double replacement)

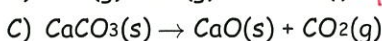


single replacement

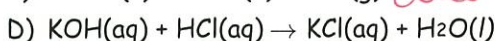
→ because ...



synthesis



decomposition



double replacement

4. What is the percent composition by mass of nitrogen in NH_4NO_3 (gram-formula mass = 80.0 grams/mole)?

- A) 60.0% B) 35.0%
C) 52.5% D) 17.5%

→ show work

5. What is the total number of moles of atoms present in 1 gram formula mass of $\text{Pb(C}_2\text{H}_3\text{O}_2)_2$?

- A) 9 B) 14 C) 3 D) 15

→ why?

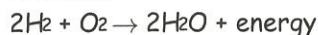
6. What is the total mass of 4.0 moles of $\text{H}_2\text{(g)}$?

- A) 1.0 g B) 4.0 g C) 2.0 g D) 8.0 g

→ show work with equation

Show all work in Right column for credit

7. Given the balanced equation representing a reaction:

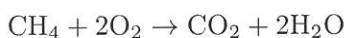


Which mass of oxygen completely reacts with 4.0 grams of hydrogen to produce 36.0 grams of water?

- A) 8.0 g B) 40.0 g
C) 32.0 g D) 16.0 g

→ show work or explain why

8. Given the balanced equation representing the reaction between methane and oxygen:

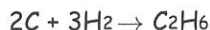


According to this equation, what is the mole ratio of oxygen to methane?

- A) $\frac{1 \text{ mole O}_2}{2 \text{ moles CH}_4}$ B) $\frac{2 \text{ grams O}_2}{1 \text{ gram CH}_4}$
C) $\frac{2 \text{ moles O}_2}{1 \text{ mole CH}_4}$ D) $\frac{1 \text{ gram O}_2}{2 \text{ grams CH}_4}$

Why?
How did you get your values?

9. Given the balanced equation:



What is the total number of moles of C that must completely react to produce 2.0 moles of C₂H₆?

- A) 1.0 mol B) 2.0 mol
C) 3.0 mol D) 4.0 mol

Show ratio setup

10. If 6.02×10^{23} molecules of N₂ react according to the equation $\text{N}_2 + 3 \text{H}_2 \rightarrow 2 \text{NH}_3$, the total number of molecules of NH₃ produced is

- A) 1.00 B) 2.00
C) 6.02×10^{23} D) 12.0×10^{23}

Why?