

1. Given the unbalanced equation:



What is the coefficient of O_2 when the equation is balanced correctly using the *smallest* whole number coefficients?

- A) 1 B) 2 C) 3 D) 4

2. Which equation shows conservation of atoms?

- A) $\text{H}_2 + \text{O}_2 \rightarrow \text{H}_2\text{O}$
B) $\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
C) $2\text{H}_2 + \text{O}_2 \rightarrow 2\text{H}_2\text{O}$
D) $2\text{H}_2 + 2\text{O}_2 \rightarrow 2\text{H}_2\text{O}$

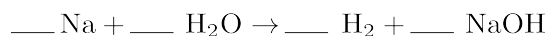
3. All chemical reactions have a conservation of

- A) mass, only
B) mass and charge, only
C) charge and energy, only
D) mass, charge, and energy

4. The coefficients in a balanced chemical equation represent

- A) the mass ratios of the substances in the reaction
B) the mole ratios of the substances in the reaction
C) the total number of electrons in the reaction
D) the total number of elements in the reaction

5. Given the unbalanced equation:



When the equation is correctly balanced using the smallest whole-number coefficients, the coefficient for H_2O is

- A) 1 B) 2 C) 3 D) 4

6. Given the incomplete equation:



Which compound is represented by X?

- A) FeO C) Fe_3O_2
B) Fe_2O_3 D) Fe_3O_4

7. Which balanced equation represents a single-replacement reaction?

- A) $\text{Mg} + 2\text{AgNO}_3 \rightarrow \text{Mg}(\text{NO}_3)_2 + 2\text{Ag}$
B) $2\text{Mg} + \text{O}_2 \rightarrow 2\text{MgO}$
C) $\text{MgCO}_3 \rightarrow \text{MgO} + \text{CO}_2$
D) $\text{MgCl}_2 + 2\text{AgNO}_3 \rightarrow 2\text{AgCl} + \text{Mg}(\text{NO}_3)_2$

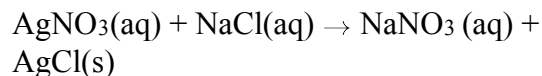
8. Which equation represents a decomposition reaction?

- A) $\text{CaCO}_3(\text{s}) \rightarrow \text{CaO}(\text{s}) + \text{CO}_2(\text{g})$
B) $\text{Cu}(\text{s}) + 2\text{AgNO}_3(\text{aq}) \rightarrow 2\text{Ag}(\text{s}) + \text{Cu}(\text{NO}_3)_2(\text{aq})$
C) $2\text{H}_2(\text{g}) + \text{O}_2(\text{g}) \rightarrow 2\text{H}_2\text{O}(\text{l})$
D) $\text{KOH}(\text{aq}) + \text{HCl}(\text{aq}) \rightarrow \text{KCl}(\text{aq}) + \text{H}_2\text{O}(\text{l})$

9. Which reaction best represents a combustion reaction?

- A) $\text{C}_2\text{H}_4 + \text{HCl} \rightarrow \text{C}_2\text{H}_5\text{Cl}$
B) $\text{C}_2\text{H}_4 + \text{Cl}_2 \rightarrow \text{C}_2\text{H}_4\text{Cl}_2$
C) $\text{C}_2\text{H}_4 + 3 \text{O}_2 \rightarrow 2 \text{CO}_2 + 2 \text{H}_2\text{O}$
D) $\text{C}_2\text{H}_4 + \text{H}_2\text{O} \rightarrow \text{C}_2\text{H}_5\text{OH}$

10. Given the balanced equation:

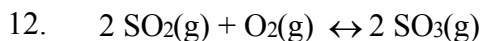


This reaction is classified as

- A) synthesis
B) decomposition
C) single replacement
D) double replacement

11. Which compound is insoluble in water?

- A) calcium bromide
B) potassium bromide
C) silver bromide
D) sodium bromide



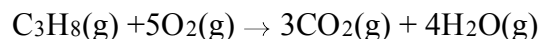
What type of reaction is shown above?

- A) synthesis
- B) decomposition
- C) single replacement
- D) double replacement

13. According to Reference Table F, which of these compounds is most soluble at 298 K and 1 atm?

- A) AgNO_3
- B) AgCl
- C) PbCrO_4
- D) PbCO_3

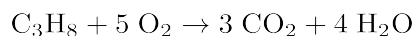
14. Given the balanced equation representing a reaction:



What is the total number of moles of $\text{O}_2(\text{g})$ required for the complete combustion of 1.5 moles of $\text{C}_3\text{H}_8(\text{g})$?

- A) .30 mol
- B) 1.5 mol
- C) 4.5 mol
- D) 7.5 mol

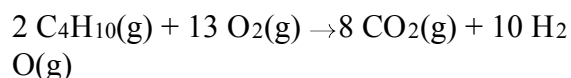
15. Given the balanced equation representing the reaction between propane and oxygen:



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

- A) $\frac{5 \text{ grams } \text{O}_2}{1 \text{ gram } \text{C}_3\text{H}_8}$
- B) $\frac{5 \text{ moles } \text{O}_2}{1 \text{ mole } \text{C}_3\text{H}_8}$
- C) $\frac{10 \text{ grams } \text{O}_2}{11 \text{ grams } \text{C}_3\text{H}_8}$
- D) $\frac{10 \text{ moles } \text{O}_2}{11 \text{ moles } \text{C}_3\text{H}_8}$

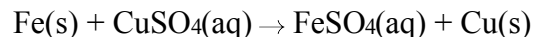
16. Given the balanced equation:



What is the total number of moles of $\text{O}_2(\text{g})$ that must react completely with 5.00 moles of $\text{C}_4\text{H}_{10}(\text{g})$?

- A) 10.0
- B) 20.0
- C) 26.5
- D) 32.5

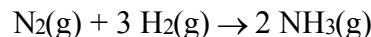
17. Given the balanced equation:



What total mass of iron is necessary to produce 1.00 mole of copper?

- A) 26.0 g
- B) 55.8 g
- C) 112 g
- D) 192 g

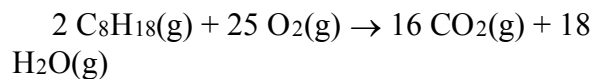
18. Given the reaction



How many liters of ammonia, measured at STP, are produced when 28.0 grams of nitrogen is completely consumed?

- A) 5.60
- B) 11.2
- C) 22.4
- D) 44.8

19. Given the reaction:



What volume of $\text{C}_8\text{H}_{18}(\text{g})$ will completely react to produce exactly 36 liters of $\text{H}_2\text{O}(\text{g})$?

- A) 27 L
- B) 2.0 L
- C) 36 L
- D) 4.0 L

20. Given the reaction:



What is the minimum amount of ammonium carbonate that reacts to produce 1.0 mole of ammonia?

- A) 0.25 mole
- B) 0.50 mole
- C) 17 moles
- D) 34 moles