

a. $2\text{KNO}_3(s) \longrightarrow 2\text{KNO}_2(s) + \text{O}_2(g)$
 b. $\text{KNO}_3(s) \longrightarrow \text{KNO}_2(s) + (1/2)\text{O}_2(g)$
 c. $2\text{KNO}_4(s) \longrightarrow 2\text{KNO}_3(s) + \text{O}_2(g)$
 d. $2\text{KNO}_3 \longrightarrow 2\text{KNO}_2 + \text{O}_2$

- 118 amu
- 132 amu
- 100 amu
- 116 amu

$\text{Li} + \text{N}_2 \longrightarrow \text{Li}_3\text{N}$
☐ $6\text{Li} + \text{N}_2 \longrightarrow 2\text{Li}_3\text{N}$, combustion
☐ $\text{Li} + \text{N}_2 \longrightarrow 3\text{Li}_3\text{N}$, decomposition
☐ $6\text{Li} + \text{N}_2 \longrightarrow 2\text{Li}_3\text{N}$, combination reaction
☐ $6\text{Li} + \text{N}_2 \longrightarrow 2\text{Li}_3\text{N}$, decomposition reaction
☐ $\text{Li} + \text{N}_2 \longrightarrow 3\text{Li}_3\text{N}$, combination

[illegible][illegible]

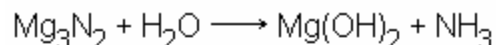
- ☐ more
- ☐ same
- ☐ less

5. Convert the following to a balanced chemical reaction:

Gaseous hydrogen reacts with carbon monoxide to form methanol, CH₃OH.

- a. $2\text{H}_2 + \text{CO} \longrightarrow \text{CH}_3\text{OH}$
- b. $4\text{H} + \text{CO} \longrightarrow \text{CH}_3\text{OH}$
- c. $2\text{H}_2 + \text{CO}_2 \longrightarrow \text{CH}_3\text{OH}$
- d. $\text{H}_2 + \text{CO} \longrightarrow \text{CH}_3\text{OH}$

6. Balance the following equation:



- a. $\text{Mg}_3\text{N}_2 + 6\text{H}_2\text{O} \longrightarrow 3\text{Mg}(\text{OH})_2 + 2\text{NH}_3$
- b. $\text{Mg}_3\text{N}_2 + 3\text{H}_2\text{O} \longrightarrow 3\text{Mg}(\text{OH})_2 + 2\text{NH}_3$
- c. $\text{Mg}_3\text{N}_2 + 2\text{H}_2\text{O} \longrightarrow \text{Mg}(\text{OH})_2 + \text{NH}_3$
- d. $\text{Mg}_3\text{N}_2 + 6\text{H}_2\text{O} \longrightarrow 3\text{Mg}(\text{OH})_2 + \text{NH}_3$

7. Calculate the number of molecules in a tablespoon of table sugar, C₁₂H₂₂O₁₁, weighing 10.5 g.

- a. 6.02×10^{23}
- b. 1.85×10^{22}
- c. 6.32×10^{24}
- d. 2.22×10^{23}
- e. 3.01×10^{23}

8. Potassium sulfate contains 44.9 percent potassium by mass. In a 50.0-g sample of potassium sulfate, the number of moles of potassium is

- a. 1.74 mol.
- b. 1.28 mol.
- c. 0.574 mol.
- d. 2.00 mol.
- e. 0.287 mol.

9. The reaction $\text{C}_7\text{H}_8 + 3\text{HNO}_3 \rightarrow \text{C}_7\text{H}_5\text{N}_3\text{O}_6 + 3\text{H}_2\text{O}$ can be used to make TNT. How many grams of HNO_3 are required to react with 10.0 g of C_7H_8 ?

- a. 6.81 g
- b. 10.1 g
- c. 2.28 g
- d. 30.0 g
- e. 20.5 g

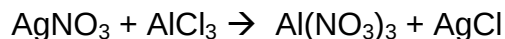
10. Calculate the number of moles of water present in a 10.0-kg sample.

- a. 55.5 mol
- b. 1.80×10^2 mol
- c. none of these
- d. 555 mol
- e. 1.80×10^5 mol

11. How many F^- ions are present in 2.50 mol of BaF_2 ?

- a. 2.50
- b. 1.51×10^{24}
- c. 8.31×10^{-24}
- d. 3.01×10^{24}
- e. 5.00

12. What mass of silver chloride can be made from the reaction of 4.22 g of silver nitrate with 7.73 g of aluminum chloride? (Be sure to balance the reaction.)



13. What is the maximum mass of Cu that is produced by the reaction of 30.0 g of CuO and 20.0 g of CH_4 ?

